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OFFICIAL REPORT OF FIRST MEETING.

held at

Chicago, Ill., Nov. 9th and 10th, 1894

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PREFACE.

The field of Railway Surgery has become so large and correspondingly important during the last decade, that it has not only elicited the profound interest of every modern surgeon, but the serious consideration of every progressive railway company.

From the fact that surgical bacteriology has revolutionized emergency surgery and with this revolution has made it possible for the railway surgeon to cut short the loss of time and suffering caused by this class of injuries, by proper treatment, and with it lessen in a corresponding ratio the damages sustained for the same by his company, it has not only awakened the interest of the surgeon but the company he represents.

With the rapid advancement of the science of modern surgery and the steady increase of the mileage of the railways of our country, has come the multiplication of railway surgeons and with them a proportionate increase of societies and associations of railway surgeons.

From the fact that few, if any of our medical schools teach "railway surgery" it has become necessary to multiply these societies and associations, where, as a member of such, the railway surgeon can exchange experience and learn how best to treat the great army of injured employes and passengers who annually come under his care, in such a manner as to give them the best results, with the least loss of time, and a minimum amount of suffering, thus reducing to the lowest ebb and amount of damages against the company.

With a full realization of these important and practical objects and in the firm belief that "*The higher the order of railway surgery the greater the protection to the employe, the passenger and the company,*" THE AMERICAN ACADEMY OF RAILWAY SURGEONS was organized and it now begs leave to submit to those interested, the Transactions of its first meeting.

R. HARVEY REED.

150 East Broad Street, Columbus, Ohio.

CHAPTER I.

THE PROCEEDINGS OF THE EXECUTIVE SESSIONS.

FIRST DAY—MORNING SESSION.

The Academy convened in Room 44 of the Grand Pacific Hotel, and was called to order by the Chairman of the Committee on Organization, DR. R. HARVEY REED, Consulting Surgeon, B. & O. R. R., Columbus, Ohio.

On motion, DR. H. J. MAYNARD, Division Surgeon, U. P. D. & G. R. R., Cheyenne, Wyo., was called to the chair.

DR. WEBB J. KELLY, Division Surgeon, Erie R. R., Galion, Ohio, was selected as temporary Secretary.

Inasmuch as the minutes of the previous meeting were nearly, if not all, contained in the report of the Committee on Permanent Organization, the reading of the same was dispensed with.

On the roll call of Charter Fellows the following surgeons who had filed written applications for fellowship were found to be present:

W. W. Appley, Surgeon, N. Y. L. E. & W. R. R., Cochecton, N. Y.

W. W. Barnett, Ass't Surgeon, N. Y. C. & St. L. R. R., Fort Wayne, Ind.

W. R. Blakeslee, Surgeon, N. Y. L. E. & W. R. R., Forest City, Pa.

D. C. Bryant, Oculist, U. P. R. R., Omaha, Neb.

W. L. Buechner, Surgeon, N. Y. L. E. & W. R. R., Youngstown, Ohio.

F. H. Caldwell, Chief Surgeon, S. F. & W. R. R., Sanford, Fla.

E. C. Carr, Surgeon, P. C. & St. L. R. R., Coshocton, Ohio.

C. K. Cole, Chief Surgeon, Montana Central R. R., Helena, Mont.

J. Homer Coulter, Surgeon, C. B. & Q. R. R., Chicago, Ill.

C. M. Daniels, Chief Surgeon, W. N. Y. & P. R. R., Buffalo. N.Y.

J. I. Barby, Chief Surgeon A. & M. R. R., Americus, Ga.

N. F. Donaldson, Ass't Surgeon, U. P. R. R., North Platte, Neb.

C. D. Evans, Surgeon, U. P. and B. & M. R. R. R., Columbus, Neb.

A. E. Evans, Surgeon, B. & O. R. R., Columbus, Ohio.

Chas. B. Fry, Surgeon, Big Four R. R., Mattoon, Ill.

W. J. Galbraith, Chief Surgeon, U. P. R. R., Omaha, Neb.

David Gildner, Surgeon, B. & O. R. R., Rockwood, Pa.

R. S. Harnden, Surgeon, Erie R. R., Waverly, N.Y.

Milton Jay, Chief Surgeon, C. & E. I. R. R., Chicago, Ill

T. C. Kennedy, Surgeon, Big Four R. R., Shelbyville, Ind.

Webb J. Kelly, Division Surgeon, Erie R. R., Galion, Ohio.

C. B. Kibler, Surgeon, N. Y. P. & O. R. R.. Corry, Pa.

L. E. Lemen, Division Surgeon, U. P. R. R., Denver, Col.

H. J. Maynard, Division Surgeon, U. P. D. & G. R. R., Cheyenne, Wyo.

W. H. Meyers, Surgeon, B. & O. R. R., Meyersdale, Pa.

R. D. Mussey, Chief Surgeon, C. H. & D. R. R., Cincinnati, Ohio.

J. P. Kirkpatrick, Surgeon, P. C. & St. L. R. R., London, Ohio.

John E. Owens, Chief Surgeon, C. & N.W. R. R., Chicago, Ill.

F. H. Peck, Surgeon, N. Y. P. & O. R. R., Clinton, N. Y.

J. K. Perkins, Surgeon, U. P. R. R., Kansas City, Mo.

R. Harvey Reed, Consulting Surgeon, B. & O. R. R., and Surgeon C. S. & H. Ry., Columbus, Ohio.

A. Rhu, Surgeon, Big Four R. R., Marion, Ohio.

A. C. Scott, Chief Surgeon, G. C. & S. F. R. R., Temple, Tex.

Howard J. Williams, Surgeon, Central R. R. of Ga., Macon, Ga.

S. G. Worley, Chief Surgeon, J. St. A. & I. R. R., St. Augustine, Fla.

Chas. H. Merz, Surgeon, C. S. & H. R. R., Sandusky, Ohio, was present before roll call but was called home by telegram.

The Committee on Permanent Organization, through its chairman, Dr. R. Harvey Reed, made the following report:

REPORT OF THE COMMITTEE ON PERMANENT ORGANIZATION.

"*History.*—The idea of an association of railway surgeons of some kind or character that should have a limited number of members is not a new one. As early as May, 1892, at Old Point Comfort this subject was discussed by many of the prominent railway surgeons of this country, who recognized the fact that such an organization was in the interest of railway surgery, as well as of the railway surgeon and the company.

"In June, 1893, this same question was again talked of by chief surgeons and others at Omaha, and not a few letters were exchanged, subsequently, between railway surgeons relative to this important move. In December, 1893, an editorial was published in the surgical department of the *Railway Age* in reference to this subject. By this brief *résumé*, it will be observed that an organization, similar to the one we expect to christen here to-day, is not of recent origin, but, on the contrary, is the result of mature consideration that dates back for years. In Galveston on May 9, 1894, an informal meeting was held by those interested in an organization of this character at the Beach Hotel, of which Dr. C. K. Cole, of Helena, Mont., acted as chairman and Dr. J. M. Dinnen, of Fort Wayne, Ind., acted as secretary. On May 10 a similar meeting was held at the Tremont House, of which the following are the minutes:

"In pursuance of the meeting held in the Beach Hotel on the evening of May 9, the following surgeons met in the parlors of the Tremont House and were called to order by Chairman Cole, of Helena, Mont.:

"Drs. A. D. Bevan, Chief Surgeon, Iowa Central R. R., Chicago, Ill.; W. A. Adams, Chief Surgeon. Ft. W. & D. R. R., Ft. Worth, Tex.; W. H. Elliott, Chief Surgeon, Central R. R. of Ga., Savannah, Ga.; John E. Owens, Chief Surgeon, C. & N. W. R. R., Chicago, Ill.; C. W. P. Brock, Chief Surgeon, C. & O. R. R., Richmond, Va.; N. Y. Leet, Chief Surgeon, D. L. & W. R. R., Scranton, Pa.; Geo. Ross, Chief Surgeon, Southern R. R. Co., Richmond, Va.; W. J. Galbraith, Chief Surgeon, U. P. R. R., Omaha, Neb.; Jas. Carter, Surgeon, U. P. R. R., Carbon, Wyo.; H. J. Williams, Chief Surgeon, Central R. R. of Ga., Macon, Ga.; R. Harvey Reed, Consulting

Surgeon, B. & O. R. R., Columbus, Ohio; N. V. B. Newcomer, Surgeon, L. E. & W. R. R., Tipton, Ind.; C. D. Evans, Surgeon, B. & M. R. R. R., Columbus, Neb.

"In the absence of the Secretary, Dr. R. Harvey Reed, of Columbus, Ohio, was requested to act in his place. An informal talk was held in which the surgeons present took part, and freely discussed the question and propriety of organizing a new association, to be named hereafter, to be composed of a limited number of members and to have for its object the advancement and improvement of railway surgery.

"It was unanimously conceded that the railways were very much opposed to transporting such a large number of surgeons and their wives to each annual meeting. It was also believed that an organization of active workers would meet with approval among the managers of the railroads and accomplish better results with less expense.

"It was therefore moved by Dr. C. W. P. Brock, of Richmond, Va., that a committee on permanent organization be appointed consisting of Drs. R. Harvey Reed, Columbus, Ohio, Chairman; Dr. W. H. Elliott, Savannah, Ga., and Dr. C. K. Cole, Helena, Mont.; said committee was authorized to proceed and take up the plans for the new organization and prepare a constitution and by-laws for the same, to be reported at a meeting to be held at a subsequent date.

"It was suggested by Dr. W. H. Elliott, of Savannah, Ga., that we request the National Association to become a delegatory body. This was favored by Dr. Brock and others. It was believed if this could be done it would not be necessary to organize a new association. After considerable discussion which was participated in by Dr. Owens, of Chicago, Dr. Galbraith, of Omaha, Dr. Ross, of Richmond, Dr. Cole, of Helena and others, a motion was finally made by Dr. Elliott, which prevailed, to appoint a committee of three to bring this matter before the National Association through its newly elected President, Dr. Thorne, of Toledo, Ohio, and get an expression from the Association. The motion was carried unanimously and the following committee appointed: Drs. Geo. Ross, Richmond, Va.; W. H. Elliott, Savannah, Ga., and Dr. N. Y. Leet, Scranton, Pa.

"On motion of Dr. W. J. Galbraith, of Omaha, Neb., the chairman of the Committee on Permanent Organization was authorized to call a meeting on or before Nov. 1, 1894, at a place to be hereafter selected for the purpose of perfecting the organization. He was also instructed to take such steps, in the meantime, as would be deemed proper and wise and which would be of assistance in enabling the committee and the charter members to secure the best organization possible.

"On motion, the meeting adjourned to re-assemble at the call of the Chairman of the Committee on Permanent Organization.

"C. K. Cole, M.D., Chairman of meeting.
"R. Harvey Reed, M.D., Secretary."

It is a matter of record that the question of resolving the National Association of Railway Surgeons into a delegatory body was duly brought before the members of the National Association by its President, Dr. S. S. Thorne, in a strong speech favoring the same, which was duly opposed by Drs, Willis P. King and W. B. Outten and the motion to make such a change defeated.

With the instructions given your committee, its members felt that their duty to the railway companies and the members on permanent organization was to proceed to carry out the instructions given them at the meeting held in the Tremont House, which they proceeded to do in the following manner:

1. The members of the committee proceeded at once to interview the presidents and managers of quite a number of the leading railroad companies, in person, in order that they might obtain from them their candid opinion relative to such an organization which should be their guide as to the propriety of attempting to complete the organization. An interview of these officials soon convinced them of the fact that an organization of this character would meet with their hearty approval and support.

Whereupon the following circular was issued, accompanied by a suitable blank, whereby those surgeons favorable to such an organization and who desired to enter it could signify the same in writing which was returned to the chair-

man of your committee, who has on file in the archives of this proposed Academy ninety-one formal applications and seven informal written applications, making a total of ninety-eight applications from all sources, from which must be deducted six who requested to withdraw their names as charter members, leaving a balance of eighty-five formal applications and seven informal applications or a net total of ninety-two.

AMERICAN ACADEMY OF RAILWAY SURGEONS.

Office of Chairman of the Committee on the Permanent Organization.

COLUMBUS, OHIO, Sept. 10, 1894.

MY DEAR DOCTOR:—In pursuance of the instructions given at the meeting held at the Tremont House, Galveston, Texas, the committee on permanent organization begs leave to submit the following synoptical report:

After diligent investigation, both by letter and personal interviews, of a great many of the leading active railway surgeons, and eminent contributors to the literature of railway surgery in this country and the Dominion of Canada, the committee has received, practically, universal encouragement, favoring the organization of an American Academy of Railway Surgery which shall have in view, among other laudable objects, the elevation and improvement of the science of railway surgery and the study of allied medico-legal questions.

The committee is pleased to inform you that they have presented the subject, pertaining to the organization of an Academy, which shall have for its object, "the higher order of railway surgery," with a limited number of permanent members, who shall be "worthy and well qualified" for membership in this proposed organization, to a large number of railway officials, and so far have only met with the most cordial encouragement.

Having received such enthusiastic encouragement from each of these sources, we have decided to call a meeting of the charter members, in Chicago, at a date to be fixed hereafter, during the latter part of October, for the purpose of effecting a permanent organization.

In addition to the executive sessions, the committee has arranged an excellent program of scientific work, which will be announced later.

With this brief preliminary explanation, the committee will be pleased to have you signify your desire of becoming a charter member by signing the inclosed blank and returning the same to the chairman of the committee, at your earliest convenience, and thus facilitate the work of completing the arrangements for the coming meeting.

Very respectfully submitted,

R. HARVEY REED, M.D., Chairman, Columbus, Ohio.
W. H. ELLIOTT, M.D., Savannah, Ga.
C. K. COLE, M.D., Helena, Mont.
Committee on Permanent Organization.

In no instance has your committee persuaded any surgeon to enter the proposed Academy. Its members adopted the policy of laying the proposed plan of organization and its objects before those railway surgeons who, in their judgment, would make desirable members of such an organization and allow them to judge for themselves of the merits of the same.

The committee recognized the fact that there are many railway surgeons in the United States, Canada and Mexico who would make desirable members of the Academy in addition to those invited and, whom we trust, will at no far distant day be recommended to fellowship in the same.

2. Having received such unquestionable encouragement from so many leading railway surgeons throughout the United States, the Dominion of Canada, and the Republic of Mexico, your committee decided to present the matter to the management of the leading railroads of this country in a formal circular letter, of which the following is a copy, and from which it received a great many replies, all of which were favorable to the proposed organization:

COLUMBUS, OHIO, Sept. 27, 1894.

DEAR SIR:—Realizing the great burden which, for years has been imposed upon the railway companies of this continent, by the yearly transportation of thousands of surgeons for the purpose of attending their annual meeting, it has become evident to many of the leading railway surgeons that

it is in the interest of their respective companies to organize an association, with a limited number of representative members, consisting only of active and experienced railway surgeons.

The committee appointed for the consideration of this very important question would be pleased to have you give your views and advice regarding the proposed organization.

If, after a careful and candid consideration of the subject it is deemed advisable, and in the interest of the railway companies of this continent, to put into operation such an organization, with a limited number of members, that shall have for its object the scientific study of the many perplexing problems that are constantly arising in railway surgery, will your company be willing to encourage such an organization in this work, by granting a limited amount of transportation, in the usual manner, for the purpose of enabling its members to attend their annual meetings?

As arrangements are being made to hold a meeting in Chicago at an early date for the purpose of taking final action on this matter, we will consider it a great favor to receive an early and frank reply from you in regard to this organization.

Very respectfully submitted,

R. Harvey Reed, M.D., Chairman,
Consulting Surgeon B. & O. R. R., Columbus, Ohio.
W. H. Elliott, M.D.,
Chief Surgeon Cent. R. R., of Ga., Savannah, Ga.
C. K. Cole, M.D.,
Chief Surgeon Montana Central R. R., Helena, Mont.

During this time a skeleton program was projected and invitations extended to charter applicants in addition to a few others, to participate in the scientific work of the meeting and, with three exceptions, written replies were received and all but two surgeons in their replies, accepted the invitation. But in each instance the replies were received too late to change the program, as it was assumed on the part of the committee that where no objections were raised silence meant consent. Fortunately, however, our program as you will see is so large that the omission of a few from the same will still leave abundance of scientific work.

A galley proof of the program was sent by your committee to the leading medical journals of the United States, the majority of which either published it in full or made a suitable announcement of the meeting.

3. In addition to that, a program was prepared a copy of which, we take it for granted, is in the hands of each applicant for fellowship at this time. A copy of the program together with the following circular was sent to the presidents and managers of the railroads which, up to this time had not responded to the former circular, while a copy of the program *without* the circular was sent to those who had, in order that those who *had* replied might see that the committee was carrying out its work in good faith, and those who *had not* replied could see that the committee was in earnest and working conscientiously in the line proposed by the original circular:

AMERICAN ACADEMY OF RAILWAY SURGEONS.

Office of Chairman Committee on Permanent Organization.

COLUMBUS, OHIO, Oct. 20, 1894.

DEAR SIR:—Please find herewith inclosed the program of the meeting of the American Academy of Railway Surgeons, to be held at the Grand Pacific Hotel, Chicago, Ill., Nov. 9 and 10, 1894.

If you find the program of sufficient merit to warrant your recognition, we will be pleased to have you indicate the same by a letter to the Chairman of this Committee, informing him whether your company will agree to give a limited amount of transportation, provided such is requested through the proper officers of the company by which the surgeon is employed. The amount of transportation necessary for the coming meeting will be very small, as the entire fellowship is limited to not exceed a total of 200 in the United States, Canada and Mexico. An early reply will be greatly appreciated. Very respectfully submitted,

R. HARVEY REED, M.D., Chairman,
Consulting Surgeon B. & O. R. R., Columbus, Ohio.
W. H. ELLIOTT, M. D.,
Chief Surgeon Cent. R. R. of Ga., of Savannah, Ga.
C. K. COLE, M.D.,
Chief Surgeon Montana Central R. R., Helena, Mont.

As a result of these formal interviews with the management we are pleased to report to you that the following railroad companies controlling over 84,000 miles, out of a possible 130,000 miles having railway surgeons in their employ, responded favorably many of whom, as you will see by the letters placed on file elsewhere for your inspection are quite enthusiastic in their support of the proposed organization, provided it is controlled in the manner set forth by the original circular.

List of railway companies from which replies were received together with the mileage of their road:

Name.	No. of Miles.	Name.	No. of Miles.
Allegheny Valley	259	K. C. St. J. & C. B.	314
A. T. &. S. F	9.320	Kanawha & Mich.	167
Baltimore & Ohio	2,136	Lake Erie & Western	720
Boston & Albany	389	M. St. P. & S. S. SM	1,170
Boston & Maine	1,294	New York & New Eng.	534
B. & M, R. R. in Neb.	3,421	N. Y. C. & St. L.	513
Cent. R. R. of Ga.	1,384	N. Y. N. H. & H.	1,473
Chicago & Alton	843	N. Y. O. & W.	477
Chicago & East. Ill.	503	Northern Pacific	4,494
Chicago & Northwestern	5,066	Ore. Ry. & Nav. Co.	1,066
Chicago B. & K. C	195	Phil. & Reading	891
C. B. & Q.	2,175	Phil. Read. & New Eng.	181
Chicago & Great Western	922	Pitts. Shen. & L. E.	182
C. R. I. & P.	3,570	Plant System	1,492
C. St. P. M. & Omaha	1,492	Queen & Crescent	1,143
C. A. & C.	177	Rio Grande Western	530
C. C. C. & St. L.	2,305	St. A. & T. H.	240
Cleve. Lorain & Wheel.	165	St. L. C. & St. P.	96
Col. Hock. Val. & Toledo	326	St. L. K. & N. W.	276
Col. San. & Hocking	271	St. Louis Southwestern	1,227
Del. Lack. & Western	882	S. P. Atlantic System	1,749
Denver & Rio Grande	1,687	Southern Ry. Co	4,392
Fitchburg	450	Texas & Pacific	1,499
Florida Central	933	T. & O. C.	357
Grand Trunk	3,510	T. A. A. & N. M.	300
Ga. South. & Fla.	382	Union Pacific	4,469
Hannibal & St. Joe	395	Wabash	1,980
Ill. Cent.	2,888	West. N. Y. & Pa	655
K. C. F. S. & M.	1,192	West Shore	512
Mex. Cent.	1,847	Wisconsin Cent.	765
			84,143

While there are quite a number of railway companies of no mean importance which have not answered to either cir-

cular, it is certainly very gratifying to note that without a single instance those who did reply were favorable to the proposed organization, and we are certainly not justified in assuming that those who did not reply were unfavorable.

4. To further assist in the permanent organization and to avoid unnecessary loss of time, Dr. C. K. Cole was requested to draw up a skeleton constitution and by-laws which was submitted to the various members of the committee, as well as others who were interested in this work, from which the Doctor has prepared a constitution which will be submitted to the Fellows of the Academy for adoption, with such alterations or modifications as in the judgment of the majority may be thought wise and prudent.

In entering into a permanent organization of this character, your committee recognized the necessity of allowing every applicant for fellowship the inalienable right of every American citizen to express his views by ballot as to *who* should be a fellow-member and associate with him in this organization. It was, therefore, thought wise to have the name of every applicant for fellowship placed on a separate slip which may be designated as a ticket, on which are two blanks opposite each name; one for "yes," and one for "no."

It is, therefore, recommended that one of these tickets be given to each formal applicant for fellowship in the proposed Academy, and at the appointed time a ballot be had whereby each applicant will be enabled to vote on every other applicant proposed for the Academy on said ticket. It is further recommended that each member write the word "yes," in the proper column, opposite each name proposed for fellowship, provided he is favorable to the same; and to write the word "no" in the proper column opposite each name of an applicant he is unfavorable to, and that it shall require at least three negative votes to reject an applicant for fellowship in the proposed Academy.

It is also recommended that the ballot be kept as secret as possible, so that no conference be held that will in any way hurt the feelings of any one who may be an honest applicant for admission, and that each ticket be placed in an envelope provided for the same and handed to the tellers whose duty it shall be to open and report the same to the

Fellows in session, being careful to keep every ballot on file for reference should such be necessary.

You will observe that we have left it to the applicants for fellowship in the proposed Academy to settle how many negative votes shall be necessary to reject a member, and we would respectfully request you as members of the Association to take proper action upon the same before the ballot is taken. We would also recommend that this ballot be taken immediately following this report,in order that the fellowship of the proposed Academy may be definitely settled and those who have and who have not a right to vote in its proceedings be determined at the earliest possible moment.

It is also recommended by your committee that only those holding charter fellowship certificates, duly signed and numbered, should be entitled to a vote on permanent fellowship in the Academy, that each applicant holding such certificate should be entitled to one vote, and further, that no applicant should be permitted to vote by proxy, but must be in attendance, and when he casts his vote demonstrate his right to cast the same by exhibiting his charter fellowship certificate, which has been furnished every formal applicant for admission to the proposed Academy. If, however, a formal applicant has failed to bring his certificate with him, or has lost it, he can be identified by the roll of formal applications in the hands of the chairman of your committee. But without such identification, it has been thought wise and prudent not to permit such parties to cast a vote. It is also recommended by your committee that immediately after the election of the temporary secretary a roll call of charter members be had, as provided for in the program, and that the said secretary satisfy himself beyond a question that no one is admitted to the executive sesssions except those who are formal applicants in the proposed Academy, as it is the firm belief of the committee that this is in the best interest of the Academy and for the maintenance and promotion of harmony and good fellowship with all concerned.

In closing, the members of your committee beg leave to express their regret at not being able to complete their work more satisfactorily, but at the same time they can as-

sure you that under the circumstances they have tried to do their duty carefully, impartially, conscientiously, and in the interest of the promotion of railway surgery and the railway companies of this continent.

Very respectfully submitted.

R. HARVEY REED, Chairman,
Consulting Surgeon B & O. R. R., Columbus, Ohio.
C. K. COLE, M.D.,
Chief Surgeon Montana Cent. R. R., Helena, Mont.
W. H. ELLIOTT, M.D.,
Chief Surgeon Georgia Cent. R. R., Savannah, Ga.

On motion of DR. W. H. MEYERS, the report of the Committee on Permanent Organization was received and referred to the Committee on Publication, and the committee discharged.

On motion of DR. F. H. PECK, Dr. C. K. Cole, Dr. R. Harvey Reed and Dr. F. H. Caldwell, were appointed a Committee on Constitution and By-Laws.

DR. C. K. COLE, Chief Surgeon, Montana Central Railroad, Helena, Mont., delivered the following address on

THE OBJECTS AND AIMS OF THE AMERICAN ACADEMY OF RAILWAY SURGEONS.

The Chairman of the Committee on Permanent Organization has placed me on the program for an address on the objects and aims of the American Academy of Railway Surgeons. I confess, at the outset, that the subject has not received at my hands the consideration its importance demands. If my statements are too brief, or too lengthy, too enthusiastic or too scant in facts, the fault may justly be charged to my friend, Dr. Reed, whose large experience should have taught him more discernment than to have selected me for such a task.

We have met to consider the advisability of organizing a Society of Railway Surgeons, which shall be cosmopolitan in character, in the sense of including representative and active men from every section of the United States, and yet whose distinctive features shall include a strictly limited membership; the limitation not applying to any particular class or grade of railway surgeons, but to numbers only.

A society which shall have for its prime object the promotion of the study of railway surgery as a special and important branch of the chirurgical art. We have not met to decry the efforts of others in this field, nor in any wise to antagonize any individual,or any set of men,in any department of medicine whatsoever. This statement seems warranted at this time, in view of the fact that it has been sought to show that our motives were not free from prejudice and bias. In this connection I may be pardoned for suggesting, that if any of us in this assembly are possessed of any other desire in connection with this first meeting than that of the development of a higher order of railway surgery, such person would best subserve the interests of the proposed organization by withdrawing before a permanent organization is effected.

However widely divergent our views may be as to methods, I assume that we are agreed that there is urgent need of steps looking to the placing of railway surgery on a higher plane than it has hitherto occupied. A facetious critic in a recent journal article, entitled, "The Evolution of the Railway Surgeon," undertook to show the folly and unwisdom of claiming any special skill or requirements in the practice of railway surgery, or the necessity for organization on the part of those engaged in this work; the experience of those present here to-day, indeed, the very fact of your presence here, is a sufficient refutation of this idea.

How best to effect an organization which shall successfully accomplish the objects in view, demands our earnest and most careful consideration at this time. During a number of years past, various plans of organization have been discussed by those more or less interested in this work. These plans have been so numerous and varied, that it is impossible in the time at my disposal to rehearse them fully and in detail. Among them, however, may be mentioned: 1, a large popular body, made up of all those engaged in the practice of railway surgery in the United States, the Canadas and Mexico; 2, a delegatory body whose members should be annually elected from State or district societies; 3, representation in a central National society by railway systems, by States or by districts, which should each include

six to twelve States. In addition it has been suggested that separate organizations be had for Local, Division and Chief Surgeons. These and other plans have each had their day and advocates, until comparatively recently, when the consensus of opinion seemed to indicate that a society with a limited membership and composed of experienced railway surgeons, of whatever grade, and who have demonstrated their qualifications for, as well as their abiding interest in railway surgery, should be formed. Generally speaking the railway managers and legal counsel, have heartily approved the plan as herein outlined, so that it remains for us to organize a society that will prove a permanently influential factor in the advancement and upbuilding of this important department of our great railway corporations.

This organization will prove useful and effective, exactly in proportion as its founders exercise care to eliminate, at the outset, such objectionable features as have been proven in experience to be dangerous. We must agree in advance that our first object is honest effort in the interest of science, so that those who look to us and depend upon us will, perforce, applaud and second our efforts, as improved methods and better results shall impress them with our sincerity of purpose. We must agree upon a plan or basis of organization which will most nearly meet, not only the conditions at present existing, but also such exigencies as are likely to arise in the future. We must agree to avoid strenuously those elements which experience has shown us to be disastrous. We must, in brief, agree that there exists a genuine necessity for such an organization as it is proposed to effect at this time. If we can not agree upon these various points, and in addition that we will each, to the best of his ability, devote time and energy now and hereafter, to the erection and maintenance of an harmonious structure for the purposes intended, it were better that we should at once separate and leave to others a task of such momentous importance.

The eyes of the railroad world will be upon us; our action will be scrutinized and perhaps our motives impugned by those who do not wish us well. We must be prepared to meet certain unjust criticisms and predictions of failure on the part of those who do not love us or our cause. We must

assure ourselves of the propriety of our motives and the rectitude of our course, so that our honesty of purpose may appear to the public in such a manner as to serve as a bulwark of defense against those who seek our discomfiture by inveighing against us.

It has occurred to me to supplement these remarks by reading a draft of a Constitution and By-Laws which will be submitted for your consideration some time during the session, and with the permission of the President, and if no one objects, I will proceed to read.

[The proposed Constitution was then read, and will be published hereafter as adopted.—Ed.]

Dr. W. J. Galbraith, Chief Surgeon, Union Pacific Railroad, Omaha, Neb., delivered the following address on

REASONS FOR THE ORGANIZATION OF THE AMERICAN ACADEMY OF RAILWAY SURGEONS.

It is my aim to present to this honorable and distinguished body of railway surgeons, some of the practical necessities and reasons for the organization of the American Academy of Railway Surgeons—an organization, born, so to speak, of the advancement of a scientific period wherein, in my opinion, we are in duty bound to combine our knowledge of modern railway surgery, as well as our experience and mechanical ingenuity, in this our special field of the chirurgical art, and thus advance and promote the standard of railway surgery in this country, and at the same time offer better protection, in times of wrecks and serious accidents, to the employe, the passenger and the company we represent.

I shall not take up your time by going into and defining the many detailed reasons for the organization of this Academy, but on the contrary will attempt to point out some of the evil influences we must at all times guard against to insure its success, and especially at our regular meetings. I feel confident that unless we observe the proper course of discipline and keep harmony in view, it will be but a short time—yes, a very short time, until the primary objects of this organization will have been lost sight of, and the Academy fall into disrepute.

The reasons for this organization are the proper demands

of our companies for us at all times, regardless of political and personal motives, to consider and study the scientific principles of how best to render surgical aid to the special classes of cases that fall into our hands by virtue of the positions we occupy as railway surgeons. Moreover it would be a fruitless task to attempt to demonstrate to you the many ways that we can assist in elevating the science of railway surgery, as well as how best to consider the many perplexing medico-legal problems that are frequently referred to us by the great corporations we represent, as well as in times of legal strife and trials, when we are summoned to appear in court as surgical experts. The great difficulty of establishing facts in personal injury propositions are well known to every judge. Our experience should map out to us the loyal and proper course to pursue, in order to protect our companies from fraud and deception. It is useless for me to dwell upon the necessity of the proper discussion of this monstrous subject, but suffice it to say, that it is one of the principal reasons for the organization of this Academy.

This Academy fully appreciates the great importance of the many complications of railway surgery and the scientific requirements of a better knowledge of the same.

It affords me great pleasure to announce, not only to the managers of railroads but to the general public as well, that this Association fully appreciates the vast field that is open to it for investigation, and by our combined efforts and constant research we shall hope to elevate our calling. With so many scientific problems before us for investigation, why should we invoke the disgust of our managers, by making useless and foolhardy recommendations as to the proper automatic car couplers to be used, or indeed to attempt to promulgate legislation looking to the passage of laws compelling all railroads to equip their rolling stock with uniform safety appliances. Action of this kind might be proper and indeed humane, but I do not deem it within the province of this organization. Nor should this organization, at this time, consider such sanitary problems as the reconstruction of the modern Pullman car, by doing away with the present elaborate upholstering and draping; or recommending that

cars be especially constructed for the transporting of consumptives and attached to all trans-continental trains in order that healthy passengers might not be exposed to the contagion or infection of tuberculosis and kindred diseases. Nor can we consistently recommend that hospital cars be maintained at all division terminals of our large railroad systems for use in times of emergency. The extreme impracticability of these and many other schemes that have been advocated by some of the younger and less experienced railway surgeons in the past, is fully appreciated by this body of surgeons. Pause, for one moment, and consider the enormous expense that would be entailed by equipping with hospital cars a single railroad like the Union Pacific.

We should not lose sight of the fact that our railroads are managed by the most able men, in their special avocations, the country affords; and that these managers have placed at the heads of the various departments of their roads, men of corresponding ability. It is the business of heads of mechanical departments to investigate the merits and demerits of whatever safety or other devices are offered, and make their recommendations to the general manager. It would be absurd then, I say, for this organization of scientific men, to mix itself up in mechanical problems that should be left alone to the mechanical and operating departments of our railroads.

One of our most prominent railroad managers, in conversation with me, a few days ago, commented most favorably upon the business-like appearance of our program for this meeting, and suggested that it would be wise to send a copy of it, as well as of all other matter pertaining to the Association, to every manager in the country, in order that they might see and know what we are doing, and especially familiarize themselves with the manner and methods employed by us in promoting this important adjunct to the modern operation of railroads. I can assure you it would give me great pleasure to have with us here to-day, all, or at least a majority of the prominent railroad managers of this country, that they might see and appreciate to a small extent, at least, the zeal that is manifested by this gathering of earnest intelligent surgeons, to promote by unified re-

search, the important specialty of railway surgery. I am glad to state that Dr. Reed will be able to give you some very surprising information concerning the railroads in this country, as well as in the Dominion of Canada and Republic of Mexico, who have expressed themselves through their general managers as being highly in favor of an organization based upon such meritorious principles as are declared by this Academy. And also, that we are encouraged and supported by the most eminent contributors to the literature of railway surgery of our times. This is certainly a very strong incentive for us to use our best endeavors to make the very most of this organization from a scientific standpoint, and truly earn that exalted motto of the Academy, "The higher the order of railway surgery the greater the protection to the employe, the passenger and the company." For what does this encouragement mean? Does it mean that we have, by false pretenses and deception invoked the support of these leading railroad men? or, does it mean that these men recognize the necessity of an organization of this kind for scientific purposes and not for the purpose of affording hundreds of surgeons the opportunity of requesting transportation for themselves, families and friends to enable them to gratify their junketing and pleasure seeking proclivities.

The future of this Academy must be apparent to every one within hearing of my voice, when we consider that this gathering together of so many eminent surgeons, is but the fruition of a few weeks' work of our committee. Certainly, it is evident that the great sheet anchor of our success (the managers) have seen and appreciated the untold benefits that may be derived from the conscientious work of an organization like the American Academy of Railway Surgeons in the working out of scientific problems growing out of the operation of railroads.

The practical feature of this Academy in limiting its membership to only active workers and writers has received several very commendable comments from general managers; they agree with us that a smaller number of active workers will accomplish much more good than a large number of lookers on. That this Academy will advance the

standing and science of railroad surgery is a certainty. It requires but a glance about this hall to behold many eminent surgeons, who, by their standing and support of the railroad they represent have this day founded one of the most respected and honorable surgical societies in this country. The character of our program proves very conclusively the distinction I have given you; its business-like expression having superseded notices of excursions and junketing trips, which have been the great drawing cards heretofore.

In conclusion, I desire to impress upon your minds the great importance of a loyal spirit toward the company you represent, as well as its employes. Secure full and accurate statements of facts in all cases of accidents. Avoid useless recommendations to your managers; and more particularly should we have a care not to allow our political ambitions or desires for self-aggrandizement to dominate our better judgment, but constantly bear in mind that this Academy is organized for the sole and express purpose of promoting our special scientific work, first, last and all the time, and thereby demonstrate to our companies its practical usefulness.

A SYMPOSIUM ON PERMANENT ORGANIZATION.

was given by Dr. R. Harvey Reed, Consulting Surgeon, B. & O. Railroad, Columbus, Ohio.

In the permanent organization of any society or association, every factor effected by such an organization should be carefully considered. Among some of these factors may be mentioned: 1, objects; 2, the methods of accomplishing the desired end; 3, those effected either directly or indirectly by such an organization.

In the address presented by Dr. Cole, you have learned that the objects of the American Academy of Railway Surgeons are: 1, the clinical and scientific study of railway surgery; 2, the careful consideration of the medico-legal questions arising out of the railway service; 3, the consideration of such sanitary and hygienic problems as may effect directly or indirectly the railway companies.

No one can deny the practical importance of the objects proposed by the Academy, and that the carrying out of the

same will result in "the higher order of railway surgery," which guarantees a corresponding protection to the employe, passenger and company.

The railway service of modern times has gradually changed from an amorphous condition to that of crystallized precision, and depends for its success upon system and exactness in all the details of the service.

It has been found necessary to have a head to every department, and those employed in each department should be well qualified for the duties devolving upon them in carrying out the work assigned to them. The better they are qualified, the better service they can render the company, and the better service rendered the company the greater the earning capacity is increased on the one hand, and the less expenditures on the other.

I.—THE DESIRED END OF ORGANIZATION.

It has seemed strange, and we might almost say paradoxical, that the surgical service should be among the last departments to undergo crystallization. Yet it is an undeniable fact that the progressive railway companies of this country have discovered that the maintenance of a well-organized surgical service is a valuable department to the company. They have learned that while it does not represent earnings, it *protects* earnings after they are secured and, as the old adage goes, a dollar saved is equivalent to a dollar earned.

II.—THE METHOD OF ACCOMPLISHING THE DESIRED END.

It is not only necessary for the Academy to have grand practical objects in view, but it is equally important that the methods adopted for carrying out these objects should be carefully, conscientiously and impartially considered. In maturing plans for the permanent organization of the Academy, it has not only been advised by many of the leading surgeons who have had long experience in the service, but recommended by many of the managers, that the Academy be limited in numbers and the same be confined to surgeons of practical ability, either as experienced surgeons or eminent observers and writers on railway surgery, forensic medicine or sanitary science.

It has long been demonstrated, that in order to accomplish the greatest amount of work in a certain direction, it is necessary to limit the number who undertake the work and make the responsibility on each one proportionately greater For instance, the railway companies do the large bulk of their important business through their general managers, who not only have experience but are held responsible for grave trusts that involve millions of dollars, which if left to the stockholders to manipulate would result in financial disaster. For this reason the railway management argues, that in order for the proposed Academy to accomplish the greatest amount of benefit to the company they represent, it can be done best by an association, such as is proposed, of a limited number of energetic practical workers who will meet from year to year, to consider and discuss the many important problems that are daily manifesting themselves in the general surgical service of the companies they represent.

The question as to how the membership of the Academy should be selected and maintained was one of no small importance, and, I can assure you, one which was not easily solved. At first thought, a delegatory system would seem to strike the mind most favorably, but when we come to consider this system in its details, the question arose as to who should select the delegates. If this could be settled satisfactorily, then a still greater obstacle presented itself, and that was the continual change of membership of the Academy from year to year.

For example, if we were to base our membership upon one delegate for every ten railway surgeons in the United States, we would at once have an eligible membership of about five hundred. We could not expect the same delegate to return from year to year, and if the company, or chief surgeon, or local surgeons from which the delegates are selected, were to attempt to act impartially and give each of their staff an opportunity to attend an annual meeting, you will at once see that with each annual meeting a new set of delegates would appear and that, under this system a delegate would only be able to attend a meeting of this character once every ten years. This being a fact, you can readily see how

it would interfere with the interest on the part of the delegates, saying nothing about their ability to accomplish the highest scientific work possible.

After discussing this question in all its phases, your committee thought best to select a nucleus for the Academy, consisting of surgeons who were believed to be worthy and well qualified in carrying out the arduous task proposed by the new organization, and that in doing so they should be made permanent members, not only in order that they would have a permanent interest, but that it might enable them to accumulate knowledge which, with each year, would increase their value, not only to the Academy but to the railways they represent and railway surgery at large. Firmly believing that this plan will render the best service, a skeleton constitution which we have already referred to has been prepared with this idea in view, and it is left to you, gentlemen, to say what the limit of membership shall be and to fix the standard of admission.

III.—THOSE AFFECTED EITHER DIRECTLY OR INDIRECTLY BY SUCH AN ORGANIZATION.

In adopting the fundamental laws of the proposed Academy, we must not be unmindful of those who will be affected by the same. We must remember that not only those who may be selected as Fellows of the Academy will be benefited or injured by our fundamental laws, but our fellow-surgeons and co-laborers, as well as the management of the railroads, will be affected for good or evil by the constitution which we may adopt. Our standard of admission should be *high* and the limit of our membership *low*. Every candidate who applies for admission should be carefully scrutinized before taken into fellowship. This would of necessity require us to take into consideration, not only what benefit the admission of such a candidate would exert on the Academy, but to what extent he would benefit the railroads which we are supposed to serve to the best of our ability in the capacity of railway surgeons.

Our fundamental laws should be of such a character as to exclude all actual drones and simple ornaments from our midst. It should encourage the admission of honest workers

who will not only be willing but eager to meet with the Academy from year to year, and assume any duties that may be assigned them which they may be capable of carrying out. We must remember in the adoption of our constitution that we are on trial and that our success, our prosperity, yea, our right to exist, will depend on the character of our work and the fruits of our labors. While sociability should contribute its benefits to the members of our Academy, our highest aim, first, last and all the time, should be the constant advancement of railway surgery by a continued endeavor to simplify its technique and solve its mysteries and thereby contribute a liberal benefit to the companies we represent.

We trust that the few hints we have thrown out in this symposium will aid the members of the Academy in adopting a constitution which will not only be simple, but practical, and which will contain the greatest number of good with the least number of objectionable features possible, and that in the consideration and adoption of these laws each Fellow will keep in view the fact that "the higher the order of railway surgery, the greater the protection to the employe, the passenger and the company."

Dr. W. H. Elliott, Chief Surgeon, Georgia Central Railroad, Savannah, Ga., who was on the program to open the discussion on the three previous papers, being detained by a railroad wreck, the discussion of these papers was postponed until later in the session. On the arrival of Dr. Elliott, the matter was again referred to by the following remarks:

Mr. President and Fellows of the Academy:

The objects and aims of this Academy should be to advance the science of railway surgery. True devotion to the attainment of knowledge and its successful application in the practice of our art, are the only means by which we can obtain this end. Devotion to science must be paramount to the gratification of personal ambition. Honors in this Academy must come unsought.

Nothing must be said or done which will reflect upon or injure the National Association of Railway Surgeons, because we are still members of that body and fellow-members in the medical profession, and the injury of one is the injury

of all. No discussion with the National Association or its members in regard to this Academy is necessary or desirable. Arguments might become heated, and while failing to convince, would most probably result in injury to the cause of railway surgery. A success of the Academy at the expense of the National Association would be temporary only, and would finally end in lowering the esteem in which the Academy and railway surgery is held.

Nothing must be done in the Academy which is not open to inspection or which is in any way calculated to make a false impression. Nothing can succeed in the long run but noble and high aims founded upon truth and justice. Our motto calls on us to be true to our profession, to our patients, and to the railway companies we serve.

> "This above all; to thine own self be true;
> And it must follow, as the night the day,
> Thou canst not then be false to any man."

On motion of Dr. R. Harvey Reed, the Academy proceeded to the election or rejection of *those present*, to fellowship in the Academy.

On motion of Dr. L. E. Lemen, *three negative votes* were declared sufficient to debar an applicant for fellowship in the Academy.

The chair appointed Dr. L. E. Lemen, Denver, Colo.; Dr. F. H. Peck, Clinton, N. Y., tellers The count of the ballots showed all present elected to charter fellowship with the exception of two.

[Owing to their mention in the preceding report, we omit the names of those who were *present* and who were elected to fellowship.—Ed.]

Adjourned to meet at 2 p.m.

Second Session, Friday, November 9, 2 p.m.

On motion of Dr. F. H. Peck, Clinton, N. Y., the Academy proceeded to ballot on the applications of those gentlemen who were *not present*.

The tellers reported the following railway surgeons who had made formal written application, as having been elected to fellowship in the Academy:

Dr. David C. Ainey, Ass't Surgeon, D. L. & W. Railway, New Milford, Pa.

Dr. Wm. T. Bishop, Medical Examiner, Pennsylvania Railway, Harrisburg, Pa.

Dr. A. B. Brumbaugh, Surgeon, Pennsylvania Railway, Huntingdon, Pa.

Dr. W. H. Buechner, Surgeon, Erie Railway, Cleveland, Ohio.

Dr. J. F. Bancroft, Chief Surgeon, U. P. D. & G. Railway, Denver, Colo.

Dr. W. M. Bullard, Ass't Surgeon, Montana Central Railway, Helena, Mont.

Dr. G. P. Conn, Chief Surgeon, C. & M. Railway, Concord. N. H.

Dr. Geo. Chaffee, Surgeon, L. I. Railway, Brooklyn, N. Y.

Dr. M. Cavana, Surgeon, N.Y. P. & O. Railway, Oneida, N.Y.

Dr. Henry W. Coe, Surgeon, East Side Railway, Portland, Ore.

Dr. R. H. Cowan, Surgeon, N. & W. Railway, Radford, Va.

Dr. Leroy Dibble, Surgeon, C. R. I. & P. Railway, Kansas City, Mo.

Dr. Wm. T. Dalley, Ass't Surgeon, U. P. Railway, Salt Lake City, Utah.

Dr. W. L. Estes, Chief Surgeon, L.V. Railway, S. Bethlehem, Pa.

Dr. F. B. Eaton, Oculist, Oregon Railway and Navigation Co., Portland, Ore.

Dr. Spencer M. Free, Surgeon, B. R. & P. R'y, DuBois, Pa.

Dr. J. H. Ford, Chief Surgeon, Big Four Railway, Wabash, Ind.

Dr. Jno. F. Fulton, Surgeon, N. P. Railway, St. Paul, Minn.

Dr. L. C. Ford, Ass't Surgeon, U. P. Railway, Lima, Mont.

Dr. E. Griswold, Surgeon, Erie Railway, Sharon, Pa.

Dr. J. D. Griffith, Consulting Surgeon, K. C. F. S. & M. Railway, Kansas City, Mo.

Dr. R. P. R. Gordon, Surgeon, G. F. & C. Railway, Great Falls, Mont.

Dr. Jesse Hawes, Division Surgeon, U. P. D. & G. Railway, Greeley, Colo.

Dr. G.W. Hogeboom, Chief Surgeon, A. T. & S. F. Railway, Topeka, Kansas.

Dr. R. L. Harris, Chief Surgeon, S. & St. A. Railway, Oakland, Fla.

Dr. Lester Keller, Surgeon, C. & O. Railway, Ironton, Ohio.

Dr. Samuel Kennedy, Surgeon, Big Four Railway, Shelbyville, Ind.

Dr. Sherman Leech, Surgeon, B. & O. Railway, Mt. Sterling, Ohio.

Dr. N. Y. Leet, Chief Surgeon, D. L. &. W. Railway, Scranton, Pa.

Dr. John McLean, Chief Surgeon, P. P. C. Co., Pullman, Ill.

*Dr. E. A. McGannon, Surgeon, G. T. Railway, Brockville, Ont., Can.

Dr. S. L. McCurdy, Surgeon, P. C. C. & St. L. Railway. Pittsburg, Pa.

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*Since deceased

Dr. Truman W. Miller, Chief Surgeon, C. &. G. T. Railway, Chicago, Ill.

Dr. Henry McHatton, Surgeon, Southern Railway Co., Macon, Ga.

Dr. W. D. Middleton, Chief Surgeon, C. R. I. & P. Railway, Davenport, Iowa.

Dr. K. A. J. Mackinzie, Chief Surgeon, O. R. & N. Co., Portland, Ore.

Dr. Wm. Mackie, Surgeon, C. M. & St. P. Railway, Milwaukee, Wis.

Dr. M. V. B. Newcomer, Surgeon, L. E. & W. Railway, Tipton, Ind.

Dr. R. Ortega, Chief Surgeon, M. I. R. R. C. P., Diaz, Mex.

Dr. J. F. Prichard, District Surgeon, C. & N. W. Railway, Manitowoc, Wis.

Dr. C. B. Powell, Surgeon, C. B. & Q. Railway, Albia, Iowa.

Dr. Geo. Ross, Chief Surgeon, Southern Railway Co., Richmond, Va.

Dr. J. F. Reger, Surgeon, B. & O. Railway, Littleton, W. Va.

Dr. F. A. Stillings, Chief Surgeon, C. & M. Railway, Concord, N. H.

Dr. C. M. Scott, Ass't Surgeon, U. P. Railway, Payette, Idaho.

Dr. S. S. Shield, Surgeon, N. Y. L. E. & W. Railway, Carbondale, Pa.

Dr. F. J. Schug, Surgeon, U. P. Railway, Tacoma, Wash.

Dr. A. N. Talley, Surgeon, C. N. & L. Railway, Columbia, S.C.

Dr. Wm. Thompson, Oculist, Pennsylvania Railway, Philadelphia, Pa.

Dr. B. H. Van Kirk, Surgeon, B. & O. Railway, West Newton, Pa.

Dr. Geo. M. Waters, Surgeon, Big Four Railway, Columbus, Ohio.

Dr. C. A. Wheaton, Chief Surgeon, St. P. & D. Railway, St. Paul, Minn.

Dr. G. A. Wall, Eye and Ear Surgeon, A. T. & S. F. Railway, Topeka, Kan.

Dr. W. H. Elliott, Chief Surgeon, Central Railway of Georgia, Savannah, Ga.

On motion of Dr. F. H. Caldwell, the vote on Dr. W. W.

Barnett was re-considered, and together with the application of Dr. Scott Helm, of Arizona, was referred to the Executive Board.

Dr. G. S. Worley, Chief Surgeon, J. St. A. & I. R. Railway, St. Augustine, Fla., read the following interesting paper on

TRAUMATIC ANEURYSM.

Under the name traumatic aneurysm, several distinct affections are usually classified. The so-called, diffuse traumatic aneurysm is, strictly speaking, not an aneurysm at all, being merely an accumulation of arterial blood diffused through the tissues of a part, and differing only from a case of ordinary wounded artery, by the absence of communication with the external air. Hence the term, traumatic diffuse aneurysm, applied to a wounded or ruptured vessel filling the whole neighborhood with almost limitless (not encapsulated blood) is evidently a misnomer, since some sort of sac is inherent to the idea of aneurysm and what has been so incorrectly named as above, is a wounded or ruptured artery with interstitial or subfascial hemorrhage. Since, however, the treatment of this affection is so nearly identical with that of other forms of traumatic aneurysm, it seems consistent to include it in any practical treatise upon this class of injuries.

The diagnosis of this condition can usually be made with tolerable facility. It is a subcutaneous, soft and fluctuating tumor, often of considerable size, containing extravasated blood, and appearing immediately, or very soon after the wounding of an artery. At first the skin covering is not affected, but in a few days it often becomes discolored with ecchymosis, caused by the infiltration of blood. If the opening in the artery be large and free, the tumor will usually exhibit pulsation, synchronous with the heart-beat accompanied by a thrilling, purring or jarring sensation, and frequently by a loud bruit. If the artery injured be a very small one, however, or if the opening in the arterial tunics be oblique or of a limited size, or obstructed, there will be no distinct pulsation or bruit. In such cases the tumor will be indolent and semi-fluctuating or will perhaps, exhibit an

impulse which is communicated to it by the subjacent artery. Many cases are reported of diffused traumatic aneurysm in which there was neither pulsation, nor thrill, nor bruit.

The size of an aneurysm of this variety will naturally be determined in a great measure by its locality. For instance, in localities where the subcutaneous connective tissue is abundant and very loose, it may rapidly attain a considerable size, while in other localities, such as the palm of the hand or the bend of the elbow, in consequence of the strength and resistance of the fascia its growth is correspondingly restricted. When the blood is suddenly effused in great quantity, in a traumatic aneurysm of the axillary or femoral region, all the constitutional signs of hemorrhage—pallor, cold sweating, pulselessness and syncope—may arise; and sometimes, in such cases, death from anemic exhaustion, as well as from syncope, may ensue. Diffuse traumatic aneurysms require the same treatment as ordinary wounded arteries; Erichson wisely observes: "The treatment of these cases must be conducted on precisely the same plan as that of an injured artery communicating with an external wound; the only difference being that, in the case of the diffused traumatic aneurysm, the aperture in the artery opens into an extravasation of blood, instead of upon the surface. We must especially be upon our guard, not to be led away by the term 'aneurysm,' that has been applied to these cases, and not to treat such a condition, resulting from wound by the means that we employ with success in the management of that disease."

The safety of the patient, as a rule, depends on exposing the injured artery, and ligaturing it above and below the lesions. In deeply seated arteries this is not by any means an easy operation. In some cases, compression, with absolute quietude of the injured part, should be tried before resorting to ligation. When arteries are ruptured by fragments of bone in simple fractures of the leg or thigh, compression, digital or instrumental, continuous or intermittent, should be applied to the main trunk of the femoral artery. This together with the immobility of the injured limb and the moderate degree of pressure on the tumefaction which are

furnished by the dressings of the fracture, has often proved much more successful than any other plan of treatment. So, also, in cases where the axillary artery is ruptured, for instance, in the act of reducing old dislocations of the shoulder joint, and a diffuse aneurysm forms in consequence thereof, compression should be applied to the subclavian artery over the first rib by means of a door key or other suitable instrument, while the arm is immovably fastened to the chest by a roller.

Should compression fail in either class of cases, deligation of the main artery will generally succeed; provided the arm be kept immovably fixed to the chest, or the leg be held motionless by the fracture dressings in the other. But, in cases where immobility of the injured part can not be secured, the wounded artery should be laid bare and ligated above and below the injury, with as little delay as possible.

When an aneurysm upon which this, which is called the "old operation" is about to be performed is so situated that the circulation in the main artery can not be controlled by digital compression, nor by tourniquet,nor by Esmarch's elastic ligature—as, for example, at the root of the neck—the operation should be begun by making a puncture just large enough to admit one or two fingers of the left hand, which should be quickly thrust into the swelling in such a manner as to plug up the orifice in the integuments; the finger or fingers should then search the bottom of the cavity to find the aperture in the wounded artery, covering the aperture with the finger to prevent any outflow of blood from it, while the tumor is freely laid open, the coagula removed, and the artery ligated on each side of the lesion, as was done by Dr. R. F. Weir, U. S. Army, during the late civil war.

There is another variety of traumatic aneurysm,the pathology of which is the same as that just described, but in which the extravasation is less extensive, and in which an adventitious sac has been formed by the agglutination of the surrounding areolar tissue. Most or all of the large aneurysms, however, could be included in this class, on account of the substitution of condensed connective tissue in the wall for the distended coat of the artery. The presence of a lining coat similar to the intima of the artery is not

conclusive proof of the persistence of the latter; it may be entirely of a new formation. The common cause is a penetrating or punctured wound. It is said to be caused also, but much less frequently, by overstretching of the artery in the neighborhood of a joint and fracture. The continuity of the artery is usually not entirely destroyed, and while some of its blood escapes into the adjoining tissues, the remainder continues within it and is distributed through its branches. The effused blood is in part absorbed, and in part coagulates; and after a time a distinct sac is formed about it by condensation of the tissues, and it then differs in no essential way from the common encysted form of aneurysm. Its symptoms and its subsequent course are then the same, but during the stage of formation of the sac the condition presents symptoms of danger peculiar to itself. During the formative stage of the sac, also, the injury is peculiarly amenable to treatment by direct pressure, at the seat of injury; and often after the sac has formed, a cure may be effected by the same means. This is the one important practical point of difference between traumatic and spontaneous aneurysms.

There is another form of circumscribed traumatic aneurysm, which is called "hernial" and which results from the protrusion of the inner coats of the vessel through a wound or laceration of the outer tunics. This variety must be extremely rare; its existence, indeed, is doubted by many writers. The true circumscribed traumatic aneurysm results from a punctured wound of an artery—generally a large one—which has healed, the cicatrix afterward yielding, and a true sac being thus formed from the external coat of the vessel and its sheath. The treatment consists in compression, or in ligation of the artery at as short a distance as possible above the sac. Should, however, (in any of these forms of circumscribed traumatic aneurysm) the sac burst, allowing the aneurysm to become diffused, or should suppuration or gangrene appear imminent, the proper course would be to lay open the part freely and apply ligatures above and below, as in the case of the so-called diffused aneurysm already described.

Sometimes an artery and its contiguous vein are simul-

taneously wounded, and an abnormal communication between them established. This condition may assume two distinct forms, known respectively as aneurysmal varix, and varicose aneurysm. Aneurysmal varix consists in a direct communication between an artery and a vein. The arterial blood which is projected into the vein at each pulse-beat, dilates it more or less extensively, and causes its walls to thicken; the symptoms are the presence of a circumscribed irregular tumefaction, usually small and bluish in color formed by a dilated vein, having a peculiar tremulous motion and emitting a peculiar thrilling, hissing or buzzing sound, which arises from the passage of blood through a small aperture in the artery, into the dilated vein.

The tumor is usually accompanied by a varicose condition of the neighboring veins. It is soft and disappears upon direct pressure. It subsides when the limb is elevated so as to favor the return of venous blood toward the heart, and in the same way its pulsation is rendered less distinct. But when the limb hangs down, or pressure is applied to the vein on the cardiac side of the tumor, it enlarges and the pulsations are increased.

Compressing the vein on the distal side of the tumor does not lessen either its size or its pulsation. When, however, the artery is compressed on the cardiac side of the tumor, the pulsation immediately ceases. and it instantly returns on raising the compression.

Varicose aneurysm differs from an aneurysmal varix, in that the arterio-venous communication is indirect, through an interposed aneurysmal sac. Its symptoms are a combination of those of aneurysmal varix and of ordinary traumatic aneurysm; the tumor, as a rule, gradually enlarges and becomes more solid by the deposition of fibrin; there is a distinct impulse added to the jarring sensation of the aneurysmal varix; and there is an aneurysmal whirr superadded to the rasping sound heard in the former affection. The proper treatment of the affection, if the sac is enlarging, consists in laying open the tumor and tying the artery above and below; in doing this, however, it must be borne in mind that the first incision (which opens the dilated vein) merely exposes the external orifice of the sac, and that this

must be laid open by a second incision, when the aperture of the artery will be found more deeply seated.

The question of tying both artery and vein with double ligatures, is one which should be decided by the surgeon according to the exigency of the case. Professor Ashurst, from whom I have borrowed these illustrations respecting the various forms of traumatic aneurysm and their appropriate treatment, has hardly done more than gather up into a whole, the generalizations of his leading scientific and practical contemporaries.

In the treatment of traumatic aneurysm, particularly the varieties demanding immediate operative interference, we have a superb illustration of the slang maxim that "nothing succeeds like success."

The indications for treatment and the methods applicable for each individual case must be determined by the surgeon in attendance having in view the recognized and established laws of surgery, possessing a thorough knowledge of the anatomy of the parts to be operated upon, their correlative nervous and vascular supply and the general surroundings or the patient; he should be able by proceeding cautiously, step by step, to adopt the methods most applicable to the case.

The judicious application of pressure to the site of the injury or to the main artery, which is often essential to the successful treatment of this class of injuries, will not infrequently tax the ingenuity of the surgeon to its utmost. There can be no specially devised paraphernalia such as tourniquets, compressors, clamps or bandages which will meet the requirements in all, or in any considerable number of cases on account of the difficulty in adjusting them properly, so as to control the circulation in the wounded vessel, and at the same time protect the collateral circulation and other important structures from injurious pressure.

The more we allow ourselves to depend upon what we consider a complete armamentarium of ingenious, complicated and, as a rule, costly appliances, the more certain are we to fail in the accomplishment of our designs. It is much easier to cut a curved line with a straight knife than a straight line with a curved knife. If the surgeon understands the exact condition with which he has to deal, his

skill and tact should be equal to the emergency, and his success will often be a matter of surprise to himself and the profession over the wonderful and unexpected results accomplished with such clumsy and unscientific appliances. I do not mean by this to detract from the value of useful scientific instruments or appliances, or to disparage their use, for many of them are as indispensable to the surgeon, as the saw or square is to the carpenter, but the idea that a surgeon is incompetent to treat a complicated injury of this class, or any other class for that matter, simply because he is not in possession of some ingenious instrument or appliance devised by Professor so-and-so expressly for the purpose, is one of the gigantic errors and stumbling stones in the path of every would be successful surgeon.

The place for the armamentarium of the surgeon is in his head and not in his office or instrument case; more especially does this apply to the railway surgeon who, as a rule, has nothing but emergencies to deal with and where it is always the unexpected that happens.

The difficulty encountered by the surgeon in cutting down upon, and ligating a wounded artery in a case of diffuse traumatic aneurysm, where its continuity has been entirely destroyed, and where it is necessary to secure both ends of the vessel, or in cases of encysted aneurysm where it is necessary to ligate the artery both on the proximal and distal sides of the sac, and especially in cases of varicose aneurysm, where it may be necessary to tie both the artery and its contiguous or communicating vein separately, both above and below the tumor, are often very great, and must be overcome by the cool deliberate horse sense of the surgeon or his patient will surely suffer the consequences, likewise his own reputation.

I deem it unnecessary to add that in all cases where wounds are made for the purpose of ligating vessels, the strictest antiseptic precautions that are possible under the circumstances should be observed. The antiseptic catgut ligature or a catgut ligature supposed to be antiseptic, is generally used for tying the vessels, but I prefer a specially prepared silk ligature for the purpose, prepared in the following manner: I take a small hank of No. 1 or 2 braided

silk, and immerse it for several hours in a solution containing two parts of pure carbolic acid, two parts salicylic acid and ten parts of white wax, keeping the solution in a melted state by heat. The silk is kept in this solution for five or six hours, when it becomes so thoroughly saturated with the wax that it will remain in the tissues for several days without absorbing moisture or causing irritation. Moreover, it is, I suppose, impervious to the various pathogenic germs, which are credited with being the cause of so much trouble in these cases.

It has at least the following advantages: It is easily applied and when tied with the ordinary reef knot it will not slip. It can remain for several days in the tissues without irritating them to any appreciable extent, and the artery can be more securely occluded by it than with any other substance with which I am acquainted, especially the deep arteries which are difficult to reach.

The wound of operation should be dressed antiseptically, and redressed as often as necessary, and allowed to heal by granulation; after the ligatures have become detached and the wound is in a healthy condition the granulating surfaces should be approximated by adhesive strips or other suitable means and encouraged to heal by direct union.

The complications usually encountered in the treatment of this class of injuries are those naturally incident to obstruction of the circulation. The all important indication in cases where the main artery and vein of a limb have been occluded by ligature or other cause is to protect and preserve the collateral circulation.

The simultaneous occlusion of the main artery and vein of a limb should not cause mortification, unless the collateral channels are also obstructed. These channels may be dangerously obstructed by pressure exerted upon them from careless bandaging, or by the position in which a limb may be placed, as well as by the compression which arises from edematous, inflammatory, and hemorrhagic swelling. The aponeurosis or fascia cause strangulation by acting as unyielding bands, and should be freely incised, when necessary, in order to relieve extreme tension and the consequent pressure occasioned thereby.

I will not tax your patience further by suggestions upon the operative technique of any of the varieties of traumatic aneurysm. The diversity of method among surgeons is as great almost as the number of surgeons in existence. The idea is to determine what to do, and the general rules relating to how it should be done, with special reference to the complications liable to ensue, and then do it in your own way.

I know it is often beneficial to compare methods and endeavor to eliminate what is unnecessary in technique, and reduce everything connected with operative work to the greatest possible simplicity, but the confusion which would inevitably result from any such comparison in this instance would be greater than the benefits achieved.

In the absence of Dr. N. Y. Leet, Chief Surgeon, D. L. & W. Railway, Scranton, Pa., who was to have opened the discussion, the paper was discussed as follows by the different Fellows of the Academy:

DISCUSSION.

Dr. J. Howard Williams, of Macon, Ga.—My experience with traumatic aneurysm is rather limited. Most of my cases have been from gunshot wounds. I have never seen a case in railway injury, nor have I ever seen a traumatic aneurysm in the early stages; it has always been a circumscribed traumatic aneurysm. Most of them, as I say, were from gunshot wounds, but some of them in railroad work, however. The only thing I have ever been able to accomplish in the treatment of them was the ligation of the arteries supplying the aneurysm. Compression or any other method of treatment has not succeeded. I have tried introducing wire into the sac and the use of electricity, but the only thing that has ever succeeded with me has been ligating the arteries above the sac.

Dr. C. D. Evans, of Columbus, Neb.—While the paper is certainly a masterpiece in regard to traumatic aneurysm, there is one thing that has not been mentioned and that is the bloodless method of treating traumatic aneurysm. I had never thought of it until about three months ago, when I

operated on a patient for traumatic aneurysm, and the absence of that point in the paper brings it very forcibly to my mind. A doctor from a neighboring town brought me a case of traumatic aneurysm. It was a very plain case and very easily diagnosed. The man's leg in the upper two-thirds from the knee down was very badly ecchymosed, and a large fluctuating tumor was noticeable about midway or a little below midway on the outer side of the leg. To make a long story short, I applied an elastic bandage above the knee, and controlled hemorrhage in that way, making the lower limb bloodless, which to a great many may not seem good surgery. I ligated the posterior tibial artery, and that was the end of it. The wound healed by first intention. I turned out all the clots of blood almost the size of a goose egg. I might add also in connection with this case of traumatic aneurysm, that the man was a brickmaker by trade and was wheeling heavy loads of brick. The history he gave of the injury was this: The rain was going to destroy the brick. Several of them were wheeling heavy loads of brick together, and another man ran against his leg with the wheel of his wheelbarrow, and having a very heavy load at the time, his muscles were very tense, and the wheel coming in contact with his leg caused the injury.

Dr. John E. Owens, Chicago—I have not seen an aneurysm for a long time and I do considerable hospital practice. I can not account for it occurring in the practice of other men, and yet there is nothing special in my treatment that would prevent aneurysm. The last case of traumatic aneurysm that I have in mind was a miniature one resulting from fracture of the tibia, and there was a small pulsating tumor about the size of a filbert. I cut down upon the part and could not find anything to compress in the bone. Compression did not seem to have any effect, and the pulse was very easily observed. I cut down upon it expecting to find some vessel running into the bone around which I could place a ligature and cure it. I fished around for a long time, but could not find anything, and becoming somewhat discouraged I took a chisel and scooped everything out of the bone and cured it. I think we should use the elastic bandage in cases of traumatic aneurysm with

some degree of circumspection. It is an obstructive disease of the circulation. I refer to aneurysm in which the circulation is more or less disturbed and mortification supervenes very frequently, not only after traumatic aneurysm, before any operation has been done, but even after some operation like ligation or pressure. If we look at the liability of a case that comes to us in our line of work, we can readily see that the elastic bandage is an element in the treatment of traumatic aneurysm which may give us some trouble. The elastic bandage may be stretched considerably, and I should feel a little uncomfortable if I used it for fear of causing mortification. I would be disposed, I think, speaking in a general way, without going into details, to adopt pressure in most cases, and if I did not get very satisfactory results, I should at once cut down upon the vessel where it is possible to do so, and tie above and below. I would feel better when I got home after having done this.

Dr. Reed, of Ohio—I am very glad to see that we have with us an eminent surgeon who has just arrived. I know that he is posted on aneurysm, and I would be glad to hear from him. I refer to Dr. Bevan, of Chicago.

Dr. Arthur D. Bevan, of Chicago—I, unfortunately, did not hear the paper, but simply had an opportunity of hearing the latter part of Dr. Owen's discussion. The paper, I believe, dealt with traumatic aneurysm. I have had a very interesting case of this kind within the last few weeks which may be of interest to report. A boy of 20, received a stab wound at the apex of Scarpa's triangle. He was taken to the Cook County Hospital, and hemorrhage at the time was rather profuse. A dressing was applied which controlled the hemorrhage. The wound almost healed, and at the end of two weeks he was discharged from the hospital with a small suppurating sinus. At the end of three weeks, after the receipt of the wound, he was brought to my service at the Presbyterian Hospital with a swelling about the size of a small chicken egg over the seat of the original lesion. The signs of traumatic aneurysm were very marked. I put him under chloroform, and cut down upon the line of the mass, and I found this interesting condition: There was a stab wound anteriorly through both sides of the artery just

at the apex of Scarpa's triangle. The wound of the anterior surface of the artery was about three-quarters of an inch in length, and the wound on the posterior surface, about a quarter of an inch in length. I opened up the entire field of the lesion, the aneurysmal sac which surrounded the artery and vein and deep fascia of the thigh. The blood was pumping through the artery, and it is really remarkable that the patient did not have more hemorrhage because the sac seemed to be in direct communication with the fistula, although filled up with fibrin. The saphenous nerve was to the outer side of the vessel and the femoral vein to the posterior side. The operation was that of ligation. The patient made a good recovery without any interference with the circulation of the limb. Although I did not hear the paper, I am rather inclined to think that the idea of treating traumatic aneurysm by pressure was advocated. Personally, I do not think of a case in which I would feel warranted in treating traumatic aneurysm by pressure unless at some inoperable point of the anatomy.

Dr. W. H. Buechner, of Youngstown, Ohio—I think traumatic aneurysms in consequence of railway injuries are extremely rare. I have had a rather extensive railroad practice of twenty-seven years and have never met with one. As far as the treatment is concerned, I think the only rational treatment is to shut the vessel off. I have tried compression, electricity, etc., and I have never found that either of them amounted to much. I have always succeeded by tying the vessels. The largest traumatic aneurysm I ever saw was at Professor Volkman's surgical clinic in 1886. It was caused by a stab wound in the brachial artery. He tied the vessel on both sides, and I saw the man probably six weeks after with a perfectly useful arm, a good pulse and wrist.

Dr. Evans—I saw a case of traumatic aneurysm about twenty odd years ago. The young man was 28 years of age, of general good health, and fairly well nourished. He was swinging on a horizontal bar, and within a few hours an aneurysm of the upper third of the brachial artery presented itself. The case is hardly in line with the Doctor's paper, yet it was due to traumatic causes. The axillary artery was ligated at its upper third, and eight days afterwards

secondary hemorrhage came on. The patient made a very nice recovery. I think the success of this case was due to an idea I got from an old physician who saw the case with me, and that was compression by a bandage over the first rib, keeping it there until the wound had entirely healed. I think largely the success of the secondary operation of ligation of the axillary artery in the upper third was due to that compression. It was not stiff enough to entirely close up the wound.

Another case: A brakeman who was thrown from a freight car received an injury about the fascia lata. There was evidently considerable effusion of blood underneath it, because the swelling of the part was as large as an ordinary orange. I laid the parts thoroughly open, expecting to ligate some of the vessels, but in using hot water after the aneurysm was arrested, the wound closed up, and the patient made a good recovery.

In another case in which there was a stab wound of the subscapular artery, I laid the parts open extensively and ligated. Compression did no good. As to the use of the elastic bandage, I must say I feel some doubt as to the propriety of using it, especially when the blood supply is already interfered with. Much injury can come not only from what blood vessels remain intact, but also to the nerve tissue itself, and quite serious results might follow.

Dr. Scott, of Temple, Texas—One or two thoughts come to me since this subject has been opened for discussion that I think might well be brought up. In regard to the treatment, we must say that it necessarily varies according to the location of the aneurysm. Compression may no doubt be very good in some instances, and in others it may be harmful. I hardly think of using compression in some cases, particularly elastic compression, such as mentioned. But there are certain localities where I am satisfied compression is very good, one in particular which the Doctor has mentioned in injury to the subscapular artery. It is hard for one to understand what is to be feared in opening an aneurysm in that location unless he has had previous experience. But to one who has opened an aneurysm, perhaps as large as the head in that locality and had the

pleasure of hunting around and trying to find the bleeding vessel and some features connected with it, it naturally brings about dread. I would say that there are some cases, no doubt, that possibly can be controlled by compression, but I would not think of using it until after the blood clot had been removed. I have seen two cases of traumatic aneurysm in or about that locality. In one that I was called to see, torsion was used instead of ligation. In the other case, which I had a few months ago in Temple, I was uncertain as to whether to search for the vessel or not, and I concluded to simply make an opening, remove the blood clot, and if the bleeding were great, I would go for it. In some cases it is safer to depend upon compression, provided compression will do. I had some evidence of the location of the injury on account of the contusion of the skin. I was satisfied it would be much easier for the patient and less embarrassing for myself to use compression. This I did, and controlled the hemorrhage very nicely. But there are one or two points, I think, that should receive some attention. It seems to me that the uniform opinion expressed here is that when a vessel is exposed it should be tied both above and below the seat of injury and the wound closed up, and the aneurysmal tumor divided between the points of ligature. It may seem a little previous in suggesting under these circumstances, torsion. I would favor it for several reasons, and among them the principal one is this, that when we have large aneurysmal tumors there is abundant reason for absorption, and if any infection whatever takes place during the operation we are very liable to have serious trouble resulting. The doctor who read the paper on this subject suggested, I believe, that this particular line of injuries came under the head of emergency work, and if it is emergency work, then we are not usually properly prepared with our ligatures, that is, the average railway surgeon is not always prepared for *such* emergency work. He cannot always depend upon the ligatures he has, and under such circumstances it is much safer to resort to torsion. I desire to say that recently I conducted some experiments, the results of which I read before the Texas State Medical Association not long since and expected to have had them published in

The Railway Surgeon before this, but the paper has not yet appeared. My experiments were conducted along the line of torsion. I will mention one of them. The carotid artery of a dog was ligated, exposed, and a tube attached to it. The blood arose (in the dog's carotid artery) to about six feet in this case, and in another about five and one half feet. Then the tube was immediately removed, and about three inches of the artery were excised, the proximal end of the artery was twisted, then let go, and it failed to bleed. The tubing was then emptied and the blood vessel left attached to the tubing by a small canula. The tubing was filled with water, attached, a portion of the artery three inches long was twisted, and water allowed to flow into the vessel to see if it would causé the blood vessel to recoil or leak. The tubing was then doubled in length and filled with water rising to a height of eleven feet. This is not absolutely correct but approximately so. There was double the normal arterial pressure, the water was allowed to flow into this excised and twisted artery, and it did not cause it to open or recoil, demonstrating that a twisted blood vessel, when properly done, would resist double the normal blood pressure. That experiment was carried out in several ways. Many other experiments were done, and in connection with them, the abdominal aorta was exposed and excised, caught between two forceps and each end excised, when it remained pulsating for quite awhile after the dog was dead. I mention this to show that torsion will resist double the normal blood pressure, and we can depend upon it in these cases of aneurysmal tumors more certainly than we can ligation with silk, silkworm gut, chromicized catgut, or anything else. I have so far never heard of secondary hemorrhage from it, if it has been properly applied. It is not rare to find secondary hemorrhages from various causes where ligatures are applied.

Dr. Harndon, of Waverly, New York—I have very little to say on this subject. I have seen very little of traumatic aneurysm in railway practice. I remember a serious case in hospital practice twenty-five years ago, where it wound up with the death of the patient. The case did not occur in my practice. It may appear somewhat sensational to you, but I

believe the day will come when aneurysm will be successfully treated. When a blood vessel has been severed or nearly so, so that compression may not destroy the circulation, then I believe as a preventive of amputation that the aneurysm may be removed and the blood vessel restored by dissecting it out, perhaps stretching it somewhat which you know it will bear, and restoring its continuity by placing some tube within its walls carrying on circulation. All that remains is to make that experiment. It has been tried and has been successful, temporarily restoring the circulation in the limb by placing a tube there which would absorb without any harm being done. I believe in this direction lies a successful remedy for traumatic aneurysm.

Dr. Cole, of Helena, Montana—The author of the paper drew a graphic picture between varicose aneurysms and aneurysmal varix. I simply wish to dwell upon one or two points. The author spoke of the uniform constant thickening of the walls of the veins in those cases. Where that is the rule, I think he will agree with me it is not invariably so, and sometimes they burst through. In aneurysmal varix the wall of the veins is thin and leads to disastrous results. About three weeks ago a case was brought to my hospital in which there had been a dislocation of the joint. My assistant reduced it and overlooked a lateral dislocation of the radius. The case occurred about a month prior to my seeing it, and in attempting to replace the dislocation I succeeded in injuring the artery and produced a small traumatic aneurysm which yielded satisfactorily to pressure. I do not believe any more in the pressure treatment as a rule, than those who have expressed themselves here to-day, yet I am satisfied in emergency work we cannot be guided by any ironclad rules. We cannot lay down a rule that will be invariably followed with success. As a rule, the safer plan is ligation of the artery, not necessarily ligation of it on each side of the injury. I think that operation and the excision of the vessel between the ligatures should be done with reference to the size of the vessel and the location of the injury. I think the writer perhaps was a little misquoted by some one in saying that he invariably recommended ligation of both sides. I do not think that statement was

made in the paper, nor do I suppose any one would advocate that as an invariable rule.

Dr. Reed, of Columbus, Ohio—I have been highly entertained by the discussion of this excellent paper. It is a subject which,although not of unusual occurrence in railway surgery, is sufficiently frequent to give the surgeon considerable annoyance when it does occur. It is this class of cases that will cause you as much annoyance as any other class you may meet; at the same time, in the treatment of traumatic aneurysms we should be governed by two principal points: 1, the treatment in the primary stage; and 2, the treatment in the subsequent stage, what we might term the secondary stage of old traumatic aneurysm. In the treatment of the primary condition, such as was alluded to by Professor Bevan. we can readily understand that it would be necessary as a rule to apply a ligature, torsion, or some method which would get rid of a bleeding aneurysm, the sac of which was made up of the connective tissue, and which would be dangerous to allow to remain. I have in mind at present a case similar in character to the one reported by Professor Bevan, in which an injury occurred to the femoral artery, penetrating it from side to side, and also penetrating the vein, producing a punctured wound of both the femoral artery and femoral vein. The party was a male clerk on one of the roads running out of Columbus. The attending physician thought it was useless to do anything, and allowed the man to go without treatment, excepting to put him on his back and keep him as comfortable as possible. To his astonishment he got well with an aneurysm; in fact, he not only got well but lived and worked for fourteen years, with this aneurysm. It was situated about the region of Scarpa's triangle. Subsequently the man was taken sick and I was called to see him and observed this aneurysm. The man subsequently died of another sickness, which enabled us to make a *post-mortem* examination of the aneurysm which was the result of traumatism, and upon examining this we found that the artery had closed in this manner. We will suppose a gunshot wound or its equivalent passing through the artery from side to side, but immediately around the artery, the connective tissue formed an aneu-

rysmal sac, just as described by Dr. Bevan, until it was perhaps as large as an orange. This sac was strong enough to hold the blood and become a part, as it were, of the walls of the artery. On the other side was a similar sac which was adherent to the vein. The connective tissue was pushed out by the force of the blood against the hole made in the vein and artery and plugged both. There was adhesion of the connective tissue to the vein which formed a sac around the artery, making a complete aneurysmal sac, and at the same time closing up the wound so there would be no escape of blood. This sac thickened and became so strong as to enable the man to go on with his work without difficulty, so far as the aneurysm was concerned.

There is one method of treatment that has not been touched upon here this afternoon, and that is the Macewan needle operation which, I think, in aneurysms of this character would be advisable. I do not think the needle operation, however, would be advisable in acute aneurysm, or in aneurysm due to a recent injury.

I do not think the wire operation of Professor Ransohoff, as advocated by him before the AMERICAN MEDICAL ASSOCIATION, would be of service. I think that method of treatment is absolutely dangerous on account of the liability to the formation of clots and emboli. I simply bring up these points as being important, and which have escaped attention, in speaking of the treatment of aneurysm, and more particularly the needle operation. I have seen Professor Senn use it successfully in the Presbyterian Hospital, of this city in several cases.

THIRD SESSION, FRIDAY, NOVEMBER 9, 8 P.M.

DR. H. J. MAYNARD in the chair.

The Committee on Constitution and By-Laws, through its chairman, Dr. C. K. Cole, made the following report, which was adopted at Chicago, Nov. 9, 1894:

CONSTITUTION AND BY-LAWS OF THE AMERICAN ACADEMY OF RAILWAY SURGEONS.

NAME.

1.—The name of this organization shall be the American Academy of Railway Surgeons.

OBJECTS.

2.—The objects of the Academy shall be the improvement and advancement of Railway Surgery by means of the study of the subject in general, and especially by the study and investigation of clinical, medico-legal and sanitary matters relating thereto; by the reading and discussion of papers in convention, and the cultivation of closer fraternal relations among those actively engaged in this special work.

MEMBERSHIP.

3.—The members of this organization shall be known as Fellows, and shall be divided into two classes, namely, Active and Honorary. The list of Active Fellows shall be limited to two hundred (200) Railway Surgeons, and shall be restricted to those in actual service as such at the time of their election.

No Fellow shall continue as an Active Fellow after having severed his connection with a railway company, but he may become an Honorary Fellow by a vote of the Academy as herein provided. Honorary Fellows shall have the same privileges as Active Fellows, excepting the right to vote, hold office and participate in the Executive Sessions.

The list of Honorary Fellows shall at no time exceed one hundred (100) and shall be composed of such surgeons and physicians, as may be elected at any regular meeting by a two-thirds (⅔) vote of the Academy, provided that after the year of 1894 not more than five (5) Honorary Fellows shall be elected at any annual meeting.

PENALTIES.

4.—Upon a sufficient showing that a Fellow has been wilfully guilty of gross violation of the laws governing the Academy, or any form of professional misconduct, the Executive Board may recommend that his resignation be requested, or move his suspension or expulsion. A majority vote of the Fellows present, at an Executive Session, being necessary to fix the penalty.

OFFICERS.

5.—The officers of the Academy shall consist of: A President; two Vice-Presidents; a Secretary; a Treasurer; an Editor; an Executive Board of seven (7) including the

President, the Secretary and the Treasurer, who shall be *ex-officio* members thereof.

ELECTIONS.

6.—Applications for Fellowship shall be made in writing to the Executive Board signed by three (3) Active Fellows who are personally acquainted with the candidate. Upon a favorable report by the Executive Board a ballot shall be ordered, when if not more than three (3) negative votes appear, the candidate shall be declared elected.

The officers of the Academy shall be elected on the last day of each annual session by ballot; a majority vote of the Fellows present being necessary to a choice.

MEETINGS.

7.—The annual session of the Academy shall be held at such time and place as shall be designated by a majority vote at the previous annual session; and each session shall continue for three (3) days, unless otherwise ordered by the Academy.

An executive session for the transaction of business shall be held on the morning of the first day of each session, none but active Fellows of the Academy being present.

BY-LAWS AND RULES OF ORDER.

1.—The President shall preside at all regular meetings of the Academy, sign all official documents, and perform the ordinary duties appertaining to his office. In his absence one of the Vice-Presidents shall occupy the chair in the order of seniority; or if both of them are absent, by a Fellow elected by the Academy.

The Secretary shall keep a correct record of the proceedings of the Academy, give notice of the time and place of all meetings, receive the signatures of Fellows, sign official documents and take charge of all property of the Academy not otherwise provided for.

The Treasurer shall receive all money paid into the Academy and disburse it upon the authorized order of the President and Secretary. He shall make a full report, and his accounts shall be audited by a select committee appointed for that purpose at each annual session.

The duties of the Editor shall be those ordinarily pertaining to such an office. He shall edit all the papers and dis-

cussions, and see that they are published as directed by the Academy. He shall act as a member of the Publication Committee, consult with said Committee regarding the publication or exclusion of any paper or discussion submitted to him for publication, and assist in securing papers for each annual meeting and the proper arrangement of the same on the program, and such other duties as may be assigned him by the Committee on Publication.

EXECUTIVE BOARD.

2.—At the annual session of the Academy in 1894, four Fellows of the Executive Board shall be elected; one to serve one year, one to serve two years, one to serve three years and one to serve four years; at each annual session thereafter one member of the Executive Board shall be elected to serve four years. The functions of the Executive Board shall be both judicial and executive; it shall have the general supervision of the affairs of the Academy; it shall recommend candidates for membership in the Academy, and it alone shall have the power of moving their expulsion or suspension for any alleged offense against the Constitution or By-Laws. It shall act as a Committee on Credentials, hold any necessary meetings in the interval between sessions, and its action shall be deemed the action of the Academy unless reversed by that body.

COMMITTEES.

3.—Committee on Transportation. At each annual session the President shall appoint a Committee on Transportation consisting of three (3) Fellows. It shall be the duty of this Committee, as far as possible, to arrange with the various railway companies for the transportation of the Fellows of the Academy to and from the annual session. They shall cause the publication of a list of railways granting transportation, and other necessary information.

Committee on Publication. The President, Secretary, Treasurer and Editor shall constitute a Committee on Publication to which shall be referred all papers, reports and other matter suitable for publication by the Academy.

Committee of Arrangements. A Committee of Arrangements, consisting of three (3) Fellows, shall be appointed by the President at each annual session, the Chairman of

which shall reside in the place where the next annual session is to be held. This Committee shall confer with the Committee on Publication in the preparation of the program for the next annual session, a copy of which shall always be sent to each Fellow at least one month before the opening of the session; and shall make all necessary preparation for the meeting of the Academy.

SCIENTIFIC WORK.

4.—The scientific work of the Academy shall be divided into: 1, surgical; 2, medico-legal; 3, sanitary.

All papers and reports of discussion shall become the exclusive property of the Academy, subject to such disposition as shall be ordered by the Committee on Publication.

MEMBERSHIP FEE.

5.—The admission fee shall be five dollars ($5), to be paid when the application is made. Should the applicant fail of election this fee shall be returned to him.

DUES.

6.—The annual dues shall be five dollars ($5) payable on or before the last day of the annual meeting. Neglect or failure on the part of any Fellow to pay his dues shall forfeit his right to vote or receive the perquisites of the Academy, until his dues are paid, and the failure to pay his dues after the annual meeting shall forfeit his Fellowship.

QUORUM.

7.—Any number of Fellows present at the appointed time of the annual session shall constitute a quorum for the transaction of ordinary business, but for the election or expulsion of Fellows, or for altering the Constitution and By-Laws, twenty-five (25) Fellows shall be required to form a quorum.

ORDER OF BUSINESS.

8.—1. Call to order.
2. Addresses or other special exercises as prepared by the Committee of Arrangements.
3. Reading minutes of previous meeting.
4. Report of officers and committees.
5. Miscellaneous business.
6. Announcements.
7. Reading reports of cases and exhibitions of patients, specimens, apparatus, etc.

8. Reading and discussion of papers.
9. Unfinished business.
10. Election.

RULES.

9.—Roberts' Rules of Order shall govern the deliberations of the Academy.

AMENDMENTS.

10.—Proposed amendments to the Constitution and By-Laws must be offered in writing, at a regular session, and shall not be acted upon until the next ensuing annual session, when a two-thirds (⅔) vote of the Fellows present shall be necessary to adopt.

On motion of Dr. R. Harvey Reed, the report was considered, section by section.

On motion of Dr. Webb J. Kelly, the amended Constitution and By-Laws were adopted as a whole.

On motion of Dr. R. S. Harnden, the appointing of a Committee on Nominations was dispensed with.

Dr. R. Harvey Reed reported that an option had been offered the Academy from the Editor of the Journal of the American Medical Association, whereby said Journal would furnish the Academy a department, and would permit of the Academy's appointing its own Editor; and that he would furnish to the Academy a bound volume of the transactions of the Academy, bound in cloth, price not to exceed $1 per volume.

On motion of Dr. R. Harvey Reed, the Academy accepted the proposition from the Editor of the Journal, and the chair appointed a Committee, consisting of Dr. R. Harvey Reed, Columbus, Ohio; Dr. John E. Owens, Chicago, Ill.; and Dr. C. K. Cole, Helena, Mont., with instructions to close said contract and the committee was further instructed to make a contract with the Editor of the Journal for three hundred (300) bound volumes of the Transactions, the price not to exceed one dollar ($1) per volume.

On motion of Dr. C. D. Evans, the election of officers was made the special order of business at 2 P.M. Saturday.

On motion of Dr. F. H. Caldwell, the banquet was abandoned.

Adjourned until Saturday morning, 9 A.M.

CHAPTER II.

FOURTH SESSION, SATURDAY, NOVEMBER 10, 9 A.M.

DR. H. J. MAYNARD in the chair.

DR. A. RHU, Marion, Ohio, was called upon to act as Secretary during the temporary absence of Dr. Webb J. Kelly.

DR. R. S. HARNDEN, Surgeon Erie Railway Co., of Waverly, N. Y., read a paper on

THE BEST METHODS FOR APPROXIMATELY DETERMINING THE AMOUNT OF DAMAGES SUSTAINED BY A TRAUMATISM, FROM A MONETARY STANDPOINT.

In determining the proximate amount of damages by traumatism from railway accidents, we will invariably find ourselves embarrassed, and as Dr. Fitzgerald, of California, says, "involved in metaphysical distinctions and subtleties difficult of satisfactory application." Each case must be decided with reference to the circumstances peculiar and applicable to it. First, I believe all elements not proximately the cause of such traumatisms, should be eliminated. The railway corporation should not be held responsible for remote results, dependent upon aught else than actual negligence or fault of their own. Certainly, if a person suffer from a traumatism, and at the same time from psychic shock, the latter should be carefully considered or eliminated, and damages considered mainly upon objective indications upon the same lines followed by accident insurance companies. Prospective claim for damages, coupled with the inevitable hypnotic element, render the effort to determine the amount of actual or approximate damages satisfactory to claimant, even upon a basis of pure justice and equity, extremely difficult.

Sympathy for the injured and popular sentiment against wealthy corporations evolves suggestion, and prospective damages excites auto-suggestion, the latter stimulating the

imagination and in time, if the case be not settled, aggravating the actual objective conditions, and causing subjective and psychic disturbances realistic to the hypnotic mind of the patient, which are often serious in themselves and sometimes even fatal. These well authenticated conditions exemplify the importance both to the injured and the company of early settlement.

In my own experience as authenticating physician for insurance companies, I have often heard the expression by attending physicians that they found it extremely difficult to cure their patients on account of their expectancy of prospective claims or benefits, hence, delay in settlement of claims against the company is attended with increased and increasing liability on account of the development of neuroses and other conditions resultant, it may be, from suggestion and auto-suggestion or hypnotism purely; but at the same time, to the claimant tangible, and before the courts often considered as proximate sequences of the original traumatism. "A result may be physically secondary and consequential, and yet in legal contemplation be proximate."—(See Col. Report, Vol. IV, page 345.)

In determining approximate amount of damages it should first be ascertained whether the company's act is the proximate cause of the injury. The legal test is—and we must constantly bear that in mind—"Was the injury of such character as might reasonably have been foreseen or expected as the natural result of the act complained of?" "A party is not, in law, chargeable with results which do not naturally and reasonably follow as the consequence of his conduct."—(Sackett's Inst. to Juries, page 274.)

The decision of the Supreme Court of Pennsylvania in the case of Ewing vs. Pitts., Cin., Chi. & St. Louis R. R. Co., has an important bearing upon this point also. While we are not to treat this subject from the standpoint of the claim agent we must bear in mind, as we proceed, the legal aspects which in all cases may be prospective. We cite the above case reported in *The Railway Age*, Feb. 19, 1892.

The syllabus reads as follows: "Permanent injury to the nervous system resulting from fear caused by a collision on defendant's road, due to defendant's negligence, in conse-

quence of which the cars were thrown against the plaintiff's dwelling house in which she then was, will not support a cause of action; the permanent injury is not the natural result of negligence complained of." Continuing the court says: "It is plain from the plaintiff's statement of her case, that her only injury proceeded from fright, alarm, fear, nervous excitement and distress. There is no allegation that she had received any bodily injury. If mere fright, unaccompanied by bodily injury is a cause of action, the scope of what are known as accident cases would be greatly enlarged. For in every case of collision on a railroad the passengers, although they may have sustained no bodily harm, will have a cause of action against the company for the fright to which they have been subjected."

Thus we find, as a matter of law, damages to be reasonable must be the natural and reasonable result of the company's act or negligence. The liability of the company having been already determined or admitted, we then come to the question of reasonable approximate monetary damages. We must now take into account many circumstances, among them:

Mental distress or anxiety.

Psychic or hypnotic elements.

Loss of time and its actual monetary value.

The approximate amount of permanent injury.

The approximate effects of traumatism upon the expectancy of life.

Constitutional diseases and previous conditions.

Prospective damage by impairment of earning a livelihood.

Deception, means of.

Importance of early settlement as a means of restoration to health, and the duty of the railway surgeon to place the matter before the unfortunate claimant in its true light.

Many other matters might be mentioned, but the scope of this paper forbids.

Among the leading methods of examination, we will first emphasize the importance of avoiding suggestive questions, (the importance of this will be explained fully in other portions of this paper).

Referring to instruments of precision, we will not often

find their use necessary; occasionally in the hands of the specialist, the dynamometer, audiometer or aesthesiometer may be found of service, and likewise the electric battery, but the use of the latter is exceedingly unreliable as a test of nervous or muscular excitability, if we are to accept the views of prominent authorities, and it has been thoroughly demonstrated that the preservation of normal faradic excitability in a muscle, does not prove that the muscle is not paralyzed.

1. Probably the first circumstance of importance in our examination and approximate estimate of damages, will be the mental anguish or distress of the claimant, consisting perhaps of grief and sorrow over the loss of a limb, becoming deformed, or suffering impairment of future earning capacity, etc. The courts having decided such mental anguish and grief to be proper elements for damages. (See case Schmitz vs. St. Louis, I. M. & S. R. Co.) The court in this case declares: "Mental anguish in a boy 9 years of age, consisting of grief and sorrow over loss of his limb, and becoming a cripple for life, is a proper element for damages in an action by him for injuries sustained by the alleged negligence of a railway company at a highway crossing," also that "prospective damage by the impairment of plaintiff's capacity for earning a livelihood after his majority, is a proper element in an action for personal injuries by a minor 9 years old, although his petition contains no specific allegation in regard thereto, and there is no direct evidence on the subject."

2. We should consider the psychic or hypnotic features of the case, bearing in mind that human nature would not be what it is if expectant pecuniosity did not in some measure hypnotize the claimant. There are many cases on record which we will not, for want of space recall, where slight and unimportant injuries developed various emotional and hysterical symptoms, followed by preferment of claim for damages, and where such psychic neuroses have developed into very serious mental trouble, and resulted in large amounts being awarded the plaintiff by the jury and followed by a complete restoration to health.

Oppenheim, who is probably the highest authority we can quote, says: In his experience and in his view, psychical

disturbance and change, amounting almost to insanity, have a more prominent place in the history of accident cases than is generally accorded them. He speaks of anxiety growing into real pathologic entity. If this be true of the German, then we should certainly find it more frequently among our blended nationality in this country who are, as a rule, of a highly nervous temperament. Charcot says that "traumatic suggestion" often takes the place of "oral suggestion." Sir James Paget declares the fault is rather in weakness of the will than in its perverse strength and that when the patient says: "I can not," it looks like "I will not," but it is "I can not will." He says hosts of cases establish this fact that patients will not or can not make the necessary effort to resume work so long as the settlement of their pecuniary claim is unaffected.

Apropos of this element, and perhaps disproving fraudulent intent, is the statement of Brouardel and Pouchet that they discovered in cases hynotized into convulsions the convulsive ptomaine, and in one greatly depressed and shocked an anesthetizing ptomaine; probably these ptomaines are the results of psychic shock. Seguin says it has been known for several years that in perfectly healthy persons serious nervous symptoms may be produced by hypnotic or by non-hypnotic suggestion; he also mentions a source of persistence and aggravation of symptoms, strangely overlooked by nearly if not all writers, namely, "sympathetic care." In my own experience this has for years engaged my attention. A long-faced, kind-hearted and sympathetic nurse or attendant I have found as fatal, in some cases, especially those of traumatic neuroses, as the bite of a cobra. How many present ever saw a case of "traumatic neuroses" complicating a severe external traumatism? It rarely does so. A passenger, drunk or asleep, escapes the symptoms of "traumatic neurosis" in great measure, at least it is so admitted by all writers. They are not hynotized by the horrifying excitement of their environment.

The fact that cases of psychic neuroses are long in recovering, or perhaps do not fully recover, Dr. Seguin claims is an argument that there is organic lesion.

Many cases of supposed malingering are, no doubt, honest

types of "hypnotic neuroses." We should take this fact, now so well authenticated, into account, and consider carefully every feature of the case. It is my opinion that cases of glaring fraud are not common, but a very large element of unconscious and unintentional fraud nevertheless exists in these cases of traumatic neuroses or subjects of auto-suggestion. In private practice we are constantly misled by our neurotic patients, where no other element exists to influence deception than one of morbid exaction of sympathy or desire to cause their friends to share in their sufferings. Patients will manifest the greatest surprise if it be suggested that they should resume work. When a man has been prostrated by illness or injury and convalescence has set in he must make some voluntary effort to regain his former activity.

3. *Loss of Time and Its Actual Value.*—This will depend in large measure upon the conditions and circumstances attending each case. We must consider in this connection only damages for actual value of time lost. We shall refer, in a classification of injuries commonly met with, to the approximate value of time lost, etc. The practical question is, What is the actual pecuniary loss? The party suffering from a traumatism may claim that they would not have had such an injury or accident with its attendant risks for a large amount, but we do not take into account solace of that character. The courts have so ruled.

4. *The Approximate Amount or Extent of Permanent Injury.*—In the mind of the traumatized sufferer, this element we will usually find exaggerated. The courts and juries have never imposed upon the surgeon that he should promise recovery, or contract to unite bones which have suffered fracture, and I believe it is also a fact that courts of law do not, as a rule, find against corporations or defendants in litigation cases, damages for aught but such conditions as cause actual pecuniary detriment; hence we must exclude deformities which do not involve loss of function and also eliminate fright neuroses, which, though permanent perhaps in character, are not properly to be considered as the proximate sequence of the company's negligence or fault.

It is at once evident that a deformity or neurosis which involves a permanent impairment of function and resultant

loss throughout the balance of the life of the party should be considered, and compensation corresponding to the pecuniary loss in each case advised. Such cases are extremely rare, aside from the injuries attended with loss of limb, ankylosed joints and severe sprains, accompanied with rupture of tendons or ligaments. We should exercise extreme caution in all other cases of alleged permanent injury, as the expectancy of monetary reward is notoriously a prominent factor as an incentive to fraud. Thousands of well authenticated cases have been reported, and I have myself testified to permanent disability in more than one case and found, to my disgust and chagrin, that the payment of a handsome award for the alleged permanent damages was followed promptly by a rapid recovery. A case in point, reported by my uncle, Dr. Lewis A. Sayre, will illustrate this feature, where a man was treated by him for a fracture of the spine, by suspension and plaster jacket, resulting in perfect recovery two years subsequent to a railway company's paying him a judgment of $30,000 for permanent disability.

The mention of this case calls to mind the astounding fact lately published that the railways of Europe paid, prior to 1888, for spinal injuries alone, upwards of two million dollars. In the light of the present day, and largely as a result of the brilliant and remarkable efforts of the members of the National Association of Railway Surgeons, the fact is made clear to railway managements that a large share of this money was fraudulently obtained. The mimicries of spinal tenderness are often simulated, and it is now a recognized fact that spinal tenderness, by itself, has but little significance in reference to diseases or injury to the cord. In considering the permanent character of alleged spinal injuries we should learn an important lesson from the observations and experiments of Manley upon seventy-one human beings and twenty-two animals and also the experiments of the late Professor Watson, showing the extreme improbability and rare occurrence of permanent injury to the spinal cord from extrinsic or excentric injuries; also that injury to the spinal cord is exceedingly rare in traumatisms not involving fracture. We should also bear in mind that many cases of

functional paraplegia have been observed to recover after settlement of claim.

In a digest of 400 consecutive cases of railway injury by Dr. Howard J. Williams, of Macon, Ga., 4 cases of apparent spinal traumatism occurred, 2 of which proved to be shams, 1 was attended with fracture and 1 with hemorrhage into the cord. Among a much larger number of cases of railway traumatism in my own practice during the past twenty-two years, I have met with but one case of spinal injury and that was attended with fracture, followed at once by paraplegia, and death after several years.

Pope, the eminent surgeon, says, "After tabulating 230 cases of spinal concussion from railway injuries, that the great majority of them were tinged with the coloring of imposition."

Pain in the region of the spine is not, in itself, indicative of anything more serious than muscular or ligamentous strain or "entasis" as it is designated by some French authors, and cystitis often ascribed to paralysis of the neck of the bladder, will often be found to be simply the result of residual urine while in the recumbent position. Numbness and "tingling" may be symptoms of significance, although subjective, but is often due to local or external injury.

5. *The Approximate Effects of Traumatisms upon the Expectancy of Life.*—In determining this element or factor from a monetary standpoint, we must take into account the age and previous conditions of health of the injured party and the degree of shock. It is a well established fact that those past middle life suffering from severe traumatism, attended with serious shock, do not so fully recover therefrom, and it is a matter of common experience and observation that they do not attain to the usual period of longevity in many cases. It will also be well for us to bear in mind the fact that a feeble constitution, or one enfeebled by disease, is more likely to be shattered or permanently injured and life itself or the expectancy of life cut short. These and other like conditions bearing upon the expectancy of life, should be noted and considered in mitigation of amount of monetary award for damages, as the company is not responsible for conditions not naturally and actually the result of their

negligence or fault. If the life be cut short by reason of previously existing disease, or as a result of prior injuries in any degree, then we should eliminate to that extent, approximately, the liability of the company and the amount of award.

6. *Constitutional Diseases Having an Important Bearing upon Traumatisms.*—We will find it important to consider carefully the indications pertaining especially to phthisis and syphilis, bearing in mind the very large percentage of the population affected in some degree by these formidable constitutional conditions. We will very often find serious traumatic results complicated by these insidious enemies of the human race, both of which hide behind the mask of secrecy. Sagacity and tact are requisite to ferret out these and all other conditions, not actual sequences of the company's fault, that exact justice be done to both parties; and while the courts do not usually debar from compensation on account of these taints, we must consider them in order to form a correct estimate of the probabilities of recovery.

Herbert W. Page, M.A., M.C. Cantab., F.R.C. Surgeons of England, in his excellent work on "Railway Injuries," 1892, says: "That while victims of railway collisions are not by any means exempted from liability to suffer from every form of lesion of the spinal cord and its membranous coverings, accumulated experience leaves no longer any doubt that these grave results are most uncommon and that it is the extra-spinal structures which, in ninety-nine out of a hundred cases, bear the brunt of the violence and suffer rom it," and "that secondary and remote degeneration of the cord, in cases where there has been no distinctive evidence of injury, is very rare indeed." It would appear from these brief references to the phantom "railway spine," and the views of the highest authorities that we must not consider spinal affections or traumatisms even, when attended with syphilitic taints, as permanent conditions entitled to monetary compensation as such.

7. *Prospective Damage, by Impairment for Earning a Livelihood.*—This we referred to in the beginning of our paper, quoting from "A Page of Law," from notes of recent decisions by the courts in *The Railway Surgeon*, of Sept. 11, 1894.

We consider this, as referring more particularly to minors. It may be there is no present disability on account of the age of the injured, but in justice and equity we must consider his future, and the probable impairment of earning capacity based upon the nature of the case, his environments, prospects, etc. The subject is covered under the head of permanent injuries, etc.

8. *Deception.*—Not in the language of sentiment, but of sober fact, who can measure the extent to which people will go in this direction, and we are not now speaking of auto-deception but of the wilful malingerer? Herbert Page says: "The means of deception are curiously alike." This, because they learn through the press of symptoms of disease and injuries, or acquire such knowledge by suggestion from friends; but we will only allude briefly to this element; its powerful influence in railway cases is notorious and in this day thoroughly understood.

9. *Importance of Early Settlement.*—We should exercise care in early settlement that no injustice be done the claimant. The company can afford to be liberal with him, and perhaps award him in excess of what even he himself or his friends might consider ample compensation for actual damage sustained. They can afford this in many cases for the reason that, as a rule, they save money by so doing on account of many features already mentioned in this paper, but in my opinion, it becomes our duty not as claim agents, but as honorable members of an honored profession to make plain to the claimant the advantages to him from an early adjustment of his claim, not from a monetary point of view, but with regard to his own physical welfare. What does money amount to, obtained after years of litigation and mental worriment, which, in itself, often completely breaks a man down, compared with his health? He should be shown the physiologic and psychologic facts that are so well authenticated as tending to compass his physical and mental impairment. It is certainly a well recognized fact that early settlement is, in many cases, a curative agent.

CLASSIFICATION OF INJURIES.

In attempting a classification of the more important traumatisms, those commonly met with in railway practice, and

the best methods of obtaining the approximate amount of monetary damages, we must consider the fact, now so well established, that the consequences of railway injuries are more grave than those attending accidents in other branches of industry; this both on account of the nature of the violence producing them, and from the fact that nearly all railway traumatisms are septic when they come under the care of the surgeon. Often the shortsightedness of the railway company, in not fully comprehending the *economic* value of competent and skillful treatment at the hands of surgeons fully abreast of the times, and the failure to adopt a surgical service that would result in the selection of a staff of such skilled and experienced surgeons; results in a large monetary loss to the stockholders of such corporations. I will only allude to two cases, among many thousands of like nature. One, where $20,000 was obtained as a verdict, in lieu of $5,000, which would have been the probable limit if the injured man had received proper treatment. The doctor in this case—for he certainly was not a surgeon—applied elastic constriction upon the proximal portion of the extremities for *forty-eight* hours, and gangrene supervened with the medico-legal results mentioned. The other case I have already mentioned, that reported by Dr. Lewis A. Sayre. Decisions of the courts, holding the company responsible for conditions following—even where clearly the result of such improper treatment—indicate to us that we can not eliminate damages in any degree on that ground.

1. We will consider compound fractures, as they are undoubtedly much more frequent than simple fractures in railway surgery and fraught with vastly more serious results *especially*, as we have indicated, in the hands of surgeons who do not practice aseptic surgery, and strange as it may sound to you experienced gentlemen, at least 50 per cent. do not. Only a few years since such conditions were expected to suppurate and granulate, and "laudable pus" was an indication of successful treatment, and the monetary damage and loss greatly enhanced thereby, it being generally conceded that a compound fracture would entail double the time in healing and be attended with many times the cost of medical attendance over a case of simple fracture.

Any rules or schedules of fees for such injuries made ten years ago, certainly would require revision at this time, as most cases of compound fracture treated under *strict aseptic principles* are but little if any more formidable, or attended with much greater monetary damage to the claimant than in the case of simple fracture. In a given case of compound or comminuted fracture in which we find the external wound has healed by first intention, differing but little, if at all from the simple fracture, and where no great blemish or deformity remains, or any loss of function is apparent, we will not usually find it incumbent upon us to consider any element other than loss of time and its value, as permanent loss of function is very rarely observed following the conditions described; we should, however, bear in mind the approximate amount of time requisite for repair and restoration to normal degree of useful function, remembering always that muscles are only restored to vigor and normal power after fracture, by voluntary effort and proper exercise. Many a patient has become a hopeless cripple, simply because he "could not will," or did not, at any rate, exercise his will power—as Dr. Seguin puts it. In these cases the courts seldom make any exception, therefore, we must often find it necessary to consider such conditions. Under favorable and proper conditions we will be able to approximately determine the extent of lost time, from the observations of surgeons of large experience, but in individual cases it will vary somewhat.

1 *Fracture of Femur.*—From my own experience and that of others, I should consider in a case of compound fracture of the femur, that the degree of disability was total for at least six months, and partial six months; and at least four months of this time we should consider that total helplessness obtained, requiring an attendant. In this case we should also make an exception to ordinary fractures, compound or otherwise, on account of the inevitable shortening and the fact that but few people suffering this fracture escape some degree of deformity. In estimating the monetary damage this must be considered and aside from this, I believe, as compared with other fractures of extremities in continuity the damage would be four-fold. It is compara-

tively easy for the claim agent to approximate the amount by methods familiar to him, and followed by the Pension Department, taking the simple fracture of the lower extremity or forearm as a basis or starting point. Fractures of femur—intra-capsular—are so exceedingly rare in railway practice—as aged people to whom they are common, are infrequent travelers—they need scarcely be considered, but on account of the fact that they seldom if ever unite by bone, and that they are attended by serious deformity, the monetary damage exceeds by far that of any other, unless it be fracture of the pelvis.

2. *Simple Fracture of the Femur.*—Excluding cases of non-union—such fractures are exceedingly rare—and the cause of such non-union, usually some dyscrasia, or lack of osseous element, the fault of the patient's own system, we will not usually find the damage much, if any less, than in the case of compound fracture of the femur, provided perfect asepsis has been followed out in the latter. Taking into account, however, the greater expenses attending this fracture—about three times that of simple fracture of the arm or leg—and the greater degree of suffering, tedious convalescence, slow restoration of muscles to their former activity, and from the functional ankylosis of the joints, and the slight deformity resulting from what Prof. Frank Hamilton declares the "inevitable shortening," we must consider them, and approximately determine the damage, after taking into account the claimant's circumstances, earning capacity, etc. as indicated in previous classifications.

Fractures of the femur near, and involving the knee joint, on account of resulting ankylosis, and perhaps destruction of the joint, are much more serious, and should be classed with compound fracture of the femur not treated aseptically.

3. *Compound and Simple Fractures of the Leg.*—We classify them together, because as before stated, the approximate damage is, or need not be, under asepsis, but little if any greater in the former than the latter. Fractures in this region are undoubtedly oftener attended with non-union and deformity than in the upper extremity; in other respects the conditions and considerations obtaining with respect to damages are about the same; possibly a slight difference as

regards the period of convalescence, should be considered. Fractures of the lower extremity, not having so perfect a circulation process of repair does not so quickly or certainly follow. Cases of non-union or necrosis seriously impair the nervous system, and through the agency of sepsis break down the whole system and render the question of damages a serious one, and such cases if brought into the courts are often attended with judgments for large amounts. This should be borne in mind. If such conditions be attributed by the claimant to fright or shock at time of injury, then we should consider the decisions of the courts bearing thereupon which I have quoted; and for the simple reason that but very few coincide in their views with these decisions, I will encroach upon your time by quoting a recent decision from the *Medico-Legal Journal* of New York, of September, 1894. In Haile Curator vs. Texas and P. Ry. Co., United States Circuit Court of Appeals, 60 Federal Reports, 557, it was held that, "when a passenger on a railway train *receives no bodily injury* in an accident, caused by the excitement, hardships, and suffering resulting therefrom, the company is not liable in damages therefor, since insanity is not a probable or ordinary result of exposure to a railway accident." In the light of this and former decisions quoted, we must not consider fright or psychic shock. Non-union or necrosis would not be the "ordinary result" of such conditions, and surgical experience has fully proved them to have invariably resulted from well-known systemic conditions in the vast majority of cases.

4. *Fracture of the Arm and Forearm.*—In these fractures we will find the same general conditions to be considered as already mentioned in other fractures. We should consider the difference in right or left, as the usefulness of the member is not so important a factor in the left as in the right arm. A person suffering fracture of the former will not be so long disabled as in the latter, consequently the element of lost time and its value, differs materially. Considerations of permanent injury will seldom attach to fractures of the arm or forearm, unless complicated with injury to joints, which will be classified separately.

The slight deformity usually following fracture at the

wrist, (Colles fracture) if not attended with loss of function, must not be taken into account, as such slight deformity is the "proximate and usual result," under the most approved treatment.

The approximate amount of damages in case of fracture of the arm, is a proper basis of damages for other fractures, as it is seldom attended with permanent results and future impairment of usefulness. The value of time, expenses incident to it, and reasonable compensation for partial loss of function, beyond, say three months, which would be a fair approximate of the total disability, in a case, compound or simple, not complicated with loss of tissue or comminution of bone. Under contusion and lacerated wounds, mention will be made of such cases.

Fracture of ribs, not attended with perforation of lung, we will not often be called upon to consider. Fracture of pelvis, when not fatal, is a formidable condition of as grave a character as fracture of the femur, and attended with permanent deformity and serious physical shock, followed by permanent impairment of health.

Fracture of Fingers and Toes.—Fractures either of digits or phalanges, is attended with loss of time proportionate to that resulting from fracture of arm, but function is sooner restored and approximate amount of such damage not to exceed one-half that of the latter.

5. *Dislocations.*—This class of traumatisms is quite rare in railway practice, and so seldom attended with permanent results that we may with propriety pass it over, only calling attention to undiscovered or neglected cases which, "in spite of" the ignorance or neglect of the surgeon must be considered as proximate, and damages attach by reason of permanent deformity and disability. An exception should also be made of dislocation of the astragulus which is often attended with deformity.

6. *Amputations.*—In this class of traumatisms the same circumstances and conditions prevail as in fractures, with reference to loss of time, suffering, etc. But as regards the degree of permanent disability and approximate effects upon the expectancy of life, there is manifestly a difference especially in the latter. It is a well-known fact that amputa-

tions cut short the expectancy of life. Reflex conditions are common in stumps, which often produce serious nervous and even psychic disturbances. Amputation is the opprobrium of surgical art, and beyond the impairment for manual labor there is an element or sense of opprobrium, a mental anguish over the existing deformity. In many such cases I have observed a hypersensitiveness so great that upon the slightest manifestation of pity, sympathy, or any allusion whatever by a warm friend even, he would forfeit their esteem. The approximate amount of permanent damage for earning a livelihood, resulting from amputation of the arm or fore-arm is taken by the Pension Department as a basis of all traumatisms and diseased conditions as well; from $30 to 45 per month being the pension allowed for such loss of arm or fore-arm. In this Government award other conditions, or resulting conditions, are not followed by any farther increase of pension, the minimum pension named being considered the equivalent of allowance for total disability, unless it be in cases of total helplessness where an attendant is required; and in that case the amount allowed is $72 per month. From this, allowing for the conditions recognized by the courts quoted in the beginning of this paper, it would be comparatively easy to approximate the total amount of damages in any case of traumatism, taking into account conditions mentioned heretofore and also the normal expectancy of life.

The approximate and just monetary award in other amputations does not differ greatly, except as regards expenses in attending them. The disability for the performance of manual labor would depend somewhat upon the avocation of the claimant, but the loss of an extremity, either upper or lower, is usually considered as total disability. Amputation of digital or phalanged extremities should be considered, as the grasp of the hand is impaired, and the symmetry of the member destroyed; but as compared with the loss of the arm, the damages would be very small, unless all or most of the digits were amputated, when the damages would reasonably be nearly as great as from the former.

7. *Contused and Lacerated Wounds.*—These, the most common railway traumatisms, are often serious in character

and often complicated with injury to or fracture of osseous structures, or injury of periosteum resulting in necrosis, and in many instances injury of peripheral nerves causing reflex conditions in remote portions of the body or brain. Unless there be actual loss of tissue, we do not, under modern asepsis, often meet with such conditions resulting from traumatisms to the soft tissues. Tetanus and tetany, now known to be of septic origin, are almost unknown where sepsis is prevented by efficient antiseptic agents. It is obvious that the railway companies are, in an economic sense, greatly the gainers by the wonderful results of such antiseptic treatment, as the expenses attending the modern treatment of lacerated wounds are not one-fourth what they were but a few years since, and permanent injuries resulting are far less frequent.

In any case of crushed or lacerated wound, we must observe the same conditions as in the case of compound fractures, considering the loss of time, etc., and taking into account the deformity or impairment of function; and also the uncalled-for damages resultant from the mistake of the company of employing back numbers to do modern surgery.

We would consider scalp wounds attended with fracture as serious, for the reason that they are so often followed by serious results. Aseptically treated, these wounds when not attended by fracture, heal rapidly and seldom become elements in cases of claims for damages.

8. "*Entasis*" *or Sprains.*—We find this class of injuries to be about 10 per cent. of all railway traumatisms, and will be called upon to consider them by reason of the permanent disabilities often resulting. Sprain of the knee joint often terminates in inflammatory conditions, followed by destruction of the joint and permanent deformity or loss of limb. Damages should be apportioned in such deformity as in other cases of impaired function, and so on. Sprain of the ankle joint we often find a source of permanent impairment, the same conditions pertaining to the wrist joint with its ligamentous and complex articulation. Rupture of tendons or muscular tissue from sprains is met with, resulting frequently in permanent impairment of function but not often in serious damage.

9 *Injuries to the Eye and Ear.*—These we will send to the specialist who is employed, or should be, by the company, as "Uncle Sam" sets them the example.

10. *Rupture, or Acute Hernia.*—This is of infrequent occurrence, being met with in only about 2 per cent. of all cases of traumatism. Damages could reasonably and approximately be determined as indicated in amputation of the arm, from amount awarded by the Pension Department.

11. *Scalds and Burns.*—This class of injuries occurring only in 3 or 4 per cent. of all cases, is often of serious character, and usually fatal. The super-heated steam of the engine boiler is a terrible agency, and where a surface of the body equal to one square foot comes in contact with it, for sufficient length of time to scald the true derma, death of the victim follows. In cases not so seriously burned, great suffering results, attended with severe nervous shock and followed by serious deformity. If the face be the portion receiving the impact of the steam, as is frequently the case, if recovery take place the patient is subsequently found to be greatly disfigured. The method of "blowing out the ash-pan," is often attended with terrible results to the engineer or fireman, as I have myself in several instances observed. In determining the approximate amount of damage in these cases we will usually only be called upon to consider the disfigurement, impairment, or loss of eyesight, as the shock from burns is not, usually, attended with permanent neuroses. Many other conditions might properly be mentioned, but I have only sought to refer to the traumatisms commonly met with.

This will conclude my consideration of this important subject, and I am fully conscious that I have very imperfectly fulfilled the task allotted me: "*The Best* Method of Approximately Determining the Amount of Damage Sustained by a Traumatism, from a Monetary Standpoint."

DISCUSSION.

Dr. John E. Owens, of Chicago—I find very little to say at this moment, except perhaps to express my appreciation of the value of this paper. It is comprehensive and covers a great deal of ground. It has been carefully prepared, and I have been very much instructed by it. At the same time

in the discussion I would feel myself involved in an inextricable network were I to state the method of determining from a monetary standpoint the result from traumatism. There are so many elements involved that each case must serve as its own, or should be a problem of itself, and must be decided upon its own merits. I presume that the only discussion I ought to enter upon would be that from the standpoint of a surgeon or physician. At all events, so far as an adjuster is concerned, I have had very little experience, and I have never encouraged it among the surgeons on the lines of roads that I happen to be interested in. There are so many legal points involved in the case, so many circumstances that belong to the train service that I find, and I think others find, it would be impossible for them to wade through all and arrive at a just legal conclusion, to say nothing of the conclusion the doctor or physician himself might arrive at. When I asked a rather prominent gentleman something in reference to such matters, he said: "Is this meeting one of claim agents, of lawyers, or surgeons?" I told him in many cases he would find all these combined in the doctor, and I believe that is the case in some few instances. Again, I believe that the two positions, the position of adjuster and the one of surgeon are somewhat incompatible with each other. If it is known that the surgeon is not an adjuster, the patient unwittingly and sometimes more palpably shows animosity which interferes with the easy adjustment of the case. At the same time we can do considerable. The surgeon or physician, if tactful, can do very much in disabusing the patient's mind of these various conditions of exaggeration and influence brought about by cupidity, which the adjuster or certainly the attorney for the company can never do.

We never know what influences have been brought to bear on patients (plaintiffs) before they come into the court room. To show you I am right in this matter, I will venture to read some letters which I have secured. (These letters were then read.)

Since being notified that I was to discuss this paper a little, I have talked the matter over with some gentlemen who are very familiar with the workings of the question, and I

will read just a few extracts of a letter from an attorney connected with a railway:

"Adopting the language of the clinics, every traumatism may be said to be manifested by two distinct sets of symptoms; the one objective, sensate; the other subjective, insensate; and the law following in the footsteps of surgery allows compensation for each of these manifested effects, combining the two in order to ascertain the extent of the physical impairment as a basis of determining the actual pecuniary loss which to some degree of correctness may be estimated, and at the same time looking at the subjective symptoms as a direct basis for compensation, the amount of which is wholly speculative, conjectural, and is measured only by human sympathy, the only check against which, if indeed there is any check, is what is called judicial discretion, which is but the sympathy of the judge set against the sympathy of the juror.

"Thus the compensation which the law allows consists of two distinct elements: One a compensation and re-imbursement for pecuniary loss; the other a *solatium* wholly speculative in amount for physical pain and mental suffering.

"Here the law in this, as in all other classes of wrongs and injuries, seeks to reimburse the injured person in the pecuniary loss which follows as the natural and proximate result and consequence of the injury. Into this measure of compensation, decreased earning capacity, loss of time, money expended about the treatment and cure of the injury and restoration of the physical condition and all extra expense made reasonably necessary and proper by the injury, enter as elements. The reasonableness and propriety of the expense will vary and be dependent upon differences in the circumstances and conditions of different persons according as they are refined, cultivated, intellectual, accustomed to the conveniences or elegancies of life, or as they may be brutish, coarse, ignorant, accustomed to hardships and poverty.

"The locomotive engineer who earns by his occupation $2,500 a year, loses both hands in a railroad wreck under circumstances which render the railroad company liable. How much should the company pay on account of lost earning

capacity? The simple answer in the abstract is: "He should have such sum annually as equals the difference between the sum he would have been capable of earning each year during his life had he not been injured, and the sum he is capable of earning during the same period. How much is that? How long would he live? If he would have lived to be 80 uninjured, yet how many years and up to what age would he have been capable of earning $2,500 a year as an engineer? Being engaged in such dangerous occupation, what was his life expectancy? Or being so engaged, what was his expectancy as to immunity from injury as one of the risks of his employment incapacitating him as an engineer and for which the railroad company would not be liable?

"The theory, the abstract is easy. The question in the concrete, the present sum of money to be paid is the difficult thing to be answered.

"It has been contended by some, and even by some judges, that such a sum of money should be at present paid as when invested at the usual legal rate of interest would produce an annual sum equal to the annual loss in earning capacity. According to this method, if the annual difference should equal $5,000 and the annual rate of interest 5 per cent., a jury should award $100,000 present damages. Yet this is obviously unjust, for the reason that the injured person during his life would not have received as much as in all probability he could have earned uninjured, and at his death his heirs would be entitled to the principal which the ancestor would never during his life have been able to accumulate.

"In my judgment the best method of determining this question, should be based upon, but in some respects different from the method of estimating the present cash value of dower estates, life annuities, or annuities for other fixed periods. This method is the result of calculations as to the present value of a fixed annual value or sum continuing for an uncertain period. The probable duration of the period being estimated from the life tables. The method is fully explained in the Wigglesworth Tables, and others.

"Thus a woman 40 years of age having a dower estate

valued at $1,000, the present cash value of such an estate is only $630.

"In estimating annuities and dower interest. both terms of the proposition are fixed, one, however, being uncertain as to duration. In the question now discussed neither term is fixed for the earning capacity of man is affected, strengthened or impaired by many other causes than his physical and mental condition. And besides, while we have life tables showing the probable duration of the natural life, there are, I believe, no tables showing the probable duration of the money earning life, hence an estimate of the present sum to be paid an injured person based upon the existing tables would be much wider from the mark than on the estimates for annuities and dower interests.

"In the innocence of my youth I used to think that 'it is always the wounded bird that flutters,' but since I have been an attorney for a railroad I have seen full many a bird flutter that was not wounded. As to any basis, method or standard by which the amount of compensation to be allowed for physical pain and mental suffering may be even approximately measured, we are utterly at sea. The courts in allowing compensation for pain and suffering have arbitrarily and widely departed from the rules of law applicable to the measure of damages in all other cases. While this departure from the ordinary rules may meet the approval of our sense of humanity, it can not be reconciled with any correct principle of law, except in cases where the injury has been wilfully or wantonly inflicted in which punitive damages or smart money is allowable not as compensation to the injured person, but rather as a punishment to the wrong-doer.

"That the pain exists at all is a fact known alone to him who suffers it, while others are left to believe or disbelieve its existence accordingly as they may judge of the manifestation thereof by the alleged sufferer; who can say whether my tooth aches or that I suffer constant pain in the spinal column increased by finger pressure, without relying on the evidence of such pain emanating from myself alone? These injuries, these elements of damage, the symptoms of which are purely subjective, are indeed the most dangerous class

of cases to railroad companies, and to them railroad surgeons should give careful attention in order as far as possible to detect malingering.

"There is no 'best method' for determining the compensation that should be allowed for physical pain and mental suffering, for the allowance of such compensation is wholly without method, measure or standard of any kind, beyond the varying and uncertain emotions of the human heart."

I believe myself that from a doctor's standpoint, I might venture to detain you just a second more by saying that for the railway surgeon the following points seem very essential, and it is incumbent upon us:

1. To have a due appreciation of the cause, nature and extent of the injury.

2. An acquaintance with the pathology and prognosis of similar injuries where there is no possible liability, and where cupidity can not become an element in the problem.

3. A careful management of the injury according to the most approved methods.

4. An opinion based on the known pathology of the injury.

5. The exclusion of all litigation and other extravagant, unique and inexplicable symptoms which find no foothold in our more fixed medical and surgical literature.

Giving an opinion upon such a basis would enable our attorneys and our claim agents perhaps to more easily arrive at a proper settlement,

Dr. W. H. Meyers, of Myersdale, Pa.—The discussion brought out this point, in reference to men being under the influence of liquor, saying that the essayist was correct, but that some men played the part of impostors and were not in any way entitled to pay from the company. The Baltimore & Ohio Railway Company always pays and settles its cases promptly and liberally. The following is the history of the case:

A. J. I., married; aged 49; residence Uniontown, Pa.; claims to be injured internally in abdominal region in New Castle (yard) Pa., wreck. He says he passed blood from bowels at stool in water closet in ladies' coach; passage examined by Drs. Gildner, Meyers and W. H. Meyers, Jr., and found no blood on examination in water closet nor in snow

under water closet. The statement made by Mrs. Amanda Jacobs, 6135 Sangamon Street, Chicago, and others was that he did not complain of any injuries until after men returned from looking at the wreck. Drs. Gildners and Meyers found nothing apparently wrong, except that he was under the influence of some stimulant. Dr. Gildner and Dr. Meyers made a personal examination of patient, with reference to his pulse, examining his eyes, resorting to auscultation, percussion, etc.

Dr. Reed—The question, as stated in the program, the best method for approximately determining the amount of damage sustained by a traumatism from a monetary standpoint, is one that affects every railroad company in the country. It is one in which the railway surgeon is always called upon sooner or later to determine, and is one in which he is often placed in the most embarrassing position. If he is called upon to testify on the witness stand, this is one of the questions which the attorney for the defense will always ask, either privately or on the witness stand. It is one in which if there is no suit the surgeon is again asked by the company to settle. Now, the question of getting at this matter is one I think of great importance. I have written to quite a number of surgeons who have had experience in this matter, and I at one time prepared an editorial, or rather a paper on this subject, for *The Railway Surgeon*, in which I tried to set forth some of the principles that should govern railway surgeons in estimating these damages. After discussing the matter with the manager of *The Railway Surgeon*, who had *supreme* control, it was decided that it was not advisable for us to discuss a question of this kind. Now, it does seem to me, gentlemen, that while this is a question that is of serious importance, it is right that we should discuss it. We have no right to turn our back on a fire that is destroying our building. It is our duty to put it out if we can. We, as railway surgeons, can not afford to go on the witness stand and testify to anything that is not the truth. We can not afford to perjure ourselves for our companies, neither can we afford to go on the witness stand and testify in such a way as will destroy a just claim. It is our duty as railway surgeons to testify as to the truth, let it be what it will. Then

comes the question, How shall we determine the value of an injury? Take, for instance, a party who is injured in the arm. We will say there is a Colles fracture, and that the company was liable for the injury. Now, how are we going to determine how much that is worth, and at the same time be fair to the patient and to the company? This is the question that has been brought out in this debate, as I understand it. It seems to me we can, by accumulating facts which every railway surgeon has an opportunity to do, arrive at a general conclusion as to the value of a certain class of injuries. How are we going to do this? We can not apply any ironclad rule and say that a fractured arm is worth $500, or that a certain limb is worth $1,000, because there is a gradation of variation. One man's arm may be worth to him $5,000, while another man's arm may not be worth half that much. I am speaking now of the money value in different men. Why? Because in one case a man may have an occupation whereby he must use one arm more than another, or perhaps any other member of his body; while in the other case, the man may be able to continue his occupation, making just as much money as he did before the loss of the arm. These are points that have to be considered, and the best method of arriving at them is what we want to attain if possible.

It has been my custom for the last fifteen years to take into consideration first the condition of the patient, and the age. Age has something to do with value. A man, 21 years of age, has an earning capacity, so far as age is concerned, superior to a man of 70 years of age. That would be one factor. We should take into consideration the earning capacity of a man or woman, as the case may be, relative to his or her occupation. One laborer, we will say, earns $500 a year, while another man of higher attainments will earn $1,500 a year. Another will earn $2,000 a year, and still another $5,000. If that party is maimed in such a way as to interfere with his earning capacity, to what extent is he damaged, and that should be a factor in considering the damages sustained by the traumatism. Then again, we must take into consideration in addition to the earning capacity, the expectancy of life which has some bearing on age.

Furthermore, we must consider the amount, as the doctor stated in his paper, of actual pain and injury that the party has sustained through traumatism; in other words, the amount of suffering. What is that worth? I have been in the habit of rating a certain amount for suffering sustained by the pauper, just the same as it would be for the millionaire. One would suffer as much as the other, so that the rating is equal or on a level. But the earning capacity of the pauper would be entirely different from that of the millionaire, or of some one whose capacity for earning would be $1,000 or $2,000 a year. Then we must take into consideration the amount of time lost and the value of that time rated on the man's earning capacity, which should be based on his age, his salary, or the amount he could earn if he was not injured. I think if we take these matters into consideration we can approximately at least set a value on a broken arm, based on these three leading principles: Age, value of earning capacity, and the amount of damage that we would fix for the actual amount of pain sustained. But, at the same time, when we go before a jury, these questions are generally fixed by this body, and it is hard for us, with all the care we may take, to go before a jury and convince them as to the fixed amount of value a certain party should have for a certain injury. But at the present time, I think the legal departments of our railroads are largely coming to the idea of settling these questions without going into court, as far as possible, and here is the place where you can use these principles to the best advantage. You can rate up a man's injury approximately close to its true value, so that you can say conscientiously of this man that he has a fractured arm, that he has been off duty for six weeks, and that his time is worth so much a week. We can say there is a certain amount of permanent injury that is worth so much for the balance of his life, taking into consideration his earning capacity. By this method we can arrive at an approximately fair estimate. We should, as railway surgeons, consider these points and keep careful records of our cases. I have records of cases for over fifteen years. I know the length of time the party has been off duty; I know his earning capacity, and know what we have paid him. By taking the average case

of fracture of the arm, the average time lost, the average value of time in a certain class of cases, you can estimate the amount within a few hundred dollars of the actual value of each party's time. The main question to settle is this, Should a party be paid for the actual amount of pain they have had for a certain class of injury. One man having a fractured arm will suffer much more pain than another of the same character, because he may be a sensitive nervous man, and consequently suffers far more because of that than the other man who perhaps has more animal nature, and is less sensitive from a nervous standpoint, yet each one loses the same amount of time. So here is a gradation again. I hope we shall hear more on this question. It is one that has not been discussed to any great extent. We can find no literature on the subject except instructions given by accident insurance companies. I feel that it is a subject of sufficient importance for us to discuss and if possible fix a schedule for our guidance in this class of injuries.

Dr. Arthur D. Bevan, of Chicago—I think we are treading on dangerous ground. One of the dangers to the good name of railroad surgery is the danger of allowing railway surgeons to be made tools of by the claim agent department and by the law department. I am sory if I have to differ from the author of the paper and the past speaker, but I should say distinctly that this is not a medical question. It is purely a legal question, and one which belongs to both the law and claim departments. We should not, if we begin our Association with the motto that it is for "the higher order of railway surgery," allow anything of this kind to creep into our work. I may say to you emphatically that I do not believe we should allow railroad surgery to be prostituted to the work of handling this class of cases. We have nothing whatever to do with settling for an injury to a limb or as to the value of loss of life. I speak with some preparation upon this subject because I was down for a discussion of the paper on the best method of determining the value of life where death was caused by accidental means. I have taken some pains to run over the work with some of my legal friends, and without exception they have agreed with me that it is a purely legal question, one which cannot in any

way be discussed in a purely medical society. I do not believe that we can do anything more important, or take any more important step in placing this Academy of Railway Surgeons on a high plane,than by recognizing the fact that as railway surgeons we have nothing to do with the legal or claim department. When a man is injured you simply state to the claim or law department the outcome of the injury, and the length of time it will last. It is not for you to determine how much a jury, or judge, or company will allow him as compensation. I therefore wish to take a decided position in regard to this question. There are many chief surgeons here and we ought to discourage the handling and settling of claims by railway surgeons. We ought, on the other hand, to demand that the law and claim departments continue to take these matters in their own hands. Railroad surgery is believed by the public to be notoriously partisan. Your testimony on the witness stand is taken with a great deal of incredulity simply because we allow ourselves to be dragged into this kind of work. We ought to take a decided stand in this, that all papers read and discussed on these subjects should be recognized as outside of our sphere, as simply being read and discussed because they are of general interest just as any outside matter might be to the physician.

Dr. C. K. Cole—I agree with Dr. Bevan as to the relation of the railway surgeon to the patient, the legal department of the road, and to all concerned, and I believe that is true of Dr. Harnden, and the position taken by him, as also Dr. Owens who opened the discussion. The remarks of Dr. Bevan are remarks which have been heard before and on lines which have been somewhat fully discussed in similar organizations to this, and I think we are fully agreed that we should not be partisan, that we should not be biased, that we should give testimony which will be accepted and acceptable to the court and to all concerned, and yet we can not get away from the fact that we have a dual function as railway surgeons. We are executives of the road we represent, but that does not deny to us the privilege of giving fair and impartial testimony. As witnesses we are judicial and I believe, as a matter of fact, we are impartial and non-partisan.

I consider this a very vital question for this Academy to discuss. I can not conceive of any more important subject and yet it is to my mind a purely medico-legal question. I take it, Mr. President, that it is so important a subject that if we discuss it fully—if we could take the paper read, have it edited and condensed with the discussions already had, we will evolve facts which will enable us to approximately value life in connection with this class of accidents or cases injured upon our railroads. I had it in my mind to make the proposition that the paper and discussions should be epitomized with a view for further discussion at a subsequent meeting. I had intended to discuss the paper itself, but Drs. Owen and Reed have gone over the ground so fully that I hardly feel warranted in consuming the further time of the Academy to say any more than I have.

Dr. W. H. Elliott—In the main I agree with what Dr. Bevan has said on this subject, but I do not think the line of the surgeon's duty in this case has been as clearly stated as it might be, and I rise for that purpose. In the law department of the road I represent, they do not ask the surgeon to take any part at all in settling the claims—in fact, he is not allowed to do it. In the directions given to the surgeons, it is distinctly stated that the surgeons have no right to settle claims, nor to make any promises on part of the company, but they are expected to use all honorable means to prevent law suits. Now, I believe the duty of the surgeon is just this: I do not think it is his business to estimate the money value of an injury. I think that is outside of a surgeon's usual capacity, and furthermore, I think if done it will compromise his position. What I conceive to be the surgeon's duty is this, besides stating the extent, duration, and the exact conditions of the disabled party, that it is a medical question, that he should state clearly to both the law and claim departments of the road he represents just how much the injury, if it is permanent, interferes with the man's earning his livelihood, not how much money he can make a day. The surgeon should give the law and claim departments some basis so that they can make their figures. They are to make the figures, and you are to give the information upon which they are to make a settle-

ment. Then too, the medical man is the only one, I think that can state fairly what has been the amount of suffering in this or that case. He has watched by the patient's bedside, gone there perhaps at midnight to give a hypodermic injection, and he knows, he is accustomed to estimating suffering. He is not a doctor if he does not estimate suffering and try to relieve it. He can state, if the patient is a highly nervous subject, that the suffering has been intense, while a laboring man, whose injury seems to be a severe one, suffers much less as compared with the other patient from what you would expect from such an injury. After giving an opinion on these two points the business connection of the railway surgeon with the case ceases.

Dr. F. H. Caldwell, of Sanford, Florida—Ten years ago I told my superintendent when we had a hospital system on the road, that I occupied a dual position. I was an employe of the company and an employe of the employes. They pay so much a month to the hospital fund. It was not a charitable institution, and they had a claim upon me as well as the company, and I declined to take any part whatever in the settlement of claims. It would injure my influence for good with the employes, and it would detract from my confidence which the company had in me, and I did not think I could consistently take any action in this way. The president and superintendent of the road sustained my position and since that time I have had nothing whatever to do with damages. The method pursued by the company I represent is this, that as the papers come into my office with the request for information relative to the nature and extent of the injuries received, I indorse the extent and probable outcome of the injury and return them to the office, and that is the last I know of the matter. The rest is settled by the claim department. I showed Mr. Plant this program, but he had already received a copy of it. I told him of the importance of this discussion, we went over the program together, and he said any discussion should be *sub rosa*. "It is all right for you gentlemen to discuss this matter among yourselves and have a fair judgment as to the amount of damages that should accrue." Dr. Cole has made a point which I think is a good one, that if this discussion

should be published broadcast, and an anti-railroad attorney should get hold of it, he would make good use of it before a jury if any of us are called upon (which we are frequently) to testify in cases of this kind. I agree fully with those gentlemen who say that this matter should not be published broadcast; that if we do as Dr. Reed suggests, viz., get up a schedule, if there is any important case on hand, it will be brought before a jury and used against the company. The surgeon's duty to his patient is to get him well, if possible. If called upon to go before the court, his duty is to "tell the truth, the whole truth, and nothing but the truth;" whether it be for or against the company he represents. I tell you, gentlemen, that the onus which comes upon us as witnesses before a jury is due to a very large extent to the fact that it has been demonstrated that a large number of surgeons—I do not say any of the gentlemen present have done it—have shown their preference on the witness stand in favor of the company. The sooner we realize that fact, and the sooner we realize the fact that a plain statement of facts made before a jury is the best, the sooner will our testimony be given weight.

Dr. Lemon, of Denver—There is no doubt but that all of us as railway surgeons, when cases get into court, have to give opinions. I have made it a rule, which I consider a good one, to confine my statements to the physical signs alone. I always object to answer the question regarding pain. I do not believe any of us can determine how much pain one patient will suffer over another. That is something we can not estimate at all. That is something we should ignore and simply decline to answer. I have frequently said to lawyers, that is something I can not estimate, but the other signs I can.

Dr. Reed—I desire to make one correction. Dr. Caldwell said I spoke of a schedule of prices. I did not lay down a schedule of prices, and if that impression was conveyed I did not intend it. I meant a schedule of certain things, as it were, that should govern our judgment as to the amount of value, as, for instance, the age, the occupation of the party, and damages, what is the actual injury sustained; that we should be able to designate how much each one

should be given according to the patient's situation. I did not mean to convey the idea that we should have fixed prices. We would have to fix the price on principles, and not on any ironclad plan.

DR. HARNDEN—I think the paper has been misinterpreted somewhat by some of the gentlemen, in that I disclaimed any intention in the paper of our becoming claim agents. I would like to know if there is any gentleman in this room who acts as claim agent or does a claim agent's business. I stated in the paper that we as railway surgeons are to act as advisers, and are not expected to take the place of claim agents.

FIFTH SESSION, SATURDAY, NOVEMBER 10, 2 P.M.

CHAIRMAN DR. H. J. MAYNARD read a letter from Dr. M. Cavana, Surgeon N. Y. P. & O. R'y, Oneida, N. Y., expressing his regrets that on account of serious sickness in his family he was unable to be present but wished the Academy Godspeed.

The Academy then went into executive session to consider the applications of Drs. C. B. Parker, Surgeon, L. S. & M. S. R'y, Cleveland, Ohio; R. H. Taylor, Surgeon, Central R'y of Georgia, Griffin, Ga.; Geo.W. Crile, Surgeon, C. C. C. & St. L. R'y, Cleveland, Ohio; J. G. Davis, Chief Surgeon L. N. A. & C. R'y, Chicago, Ill.; A. D. Bevan, Chief Surgeon, Iowa Central R'y, Chicago, Ill.

The ballot having been cast it was found that all of the gentlemen named had been elected to fellowship.

THE USE OF HORSE HAIR IN SURGERY.

BY C. M. DANIELS, M.D.
CHIEF SURGEON W. N. Y. & P. R'Y, BUFFALO, N. Y.

In presenting this subject I lay no claim to originality in the use of horse hair in surgical practice as it was suggested to me ten years ago; but having used it extensively during the period mentioned, and not having seen the subject referred to but once in surgical literature, I venture to present this paper which will certainly be commended for its brevity.

For many years, surgeons have been faithfully searching

for the ideal suture, one that would be non-irritating, small in caliber, easily adjusted and afford the closest approximation of the skin layers, and this with especial reference to wounds of the face or exposed parts where the avoidance of scars, more or less unsightly, is a great desideratum.

Catgut, silk and silkworm gut have long been used, but in the first we have a rapidity of softening and relaxation that will not infrequently result in a gaping wound. In the second, the resulting "stitch marks" which are frequently long in disappearing added to the occasional irritation, and in the silkworm gut the rigidity of the suture itself makes each undesirable in superficial wounds and all usually require dressings or coverings held by bandages which are both disagreeable and cumbersome, especially when the patient is able to be about or upon the street. I speak with special reference to those wounds which in themselves are not serious enough to confine the patient, this being the class of cases where I feel free to recommend horse hair sutures and upon which I note the following points:

1. Instead of a large or medium sized needle as required with even small strands of catgut, silk or silkworm gut, with the horse hair a small eye needle, curved or straight, according to the preference of the surgeon, can be used and thus minimize the size of each puncture of the skin.

2. Horse hair, when prepared as I will suggest later, has a firmness that will give support to the skin and very materially aid in keeping in approximation the edges of the same, and more nearly resemble silkworm gut in its action in the tissue.

3. Where wounds are both lacerated and contused, with the fine needle, we can pick up many small but valuable parts which may be saved by gentle adjustment, and I will mention here that success, in any case, depends upon the care used in the introduction on one side, and exit on the other, of the needle near the margin of the cut or torn surface which should always be at right angles to the incision or skin margin, so that when the tie is made the strand will be of the same length upon the under as upon the upper side, and at a little to one side of the wound line.

4. Horse hair sutures can be placed much closer together than other suture material, with less danger of strangulation of the skin margins, this in itself better assuring perfection of adjustment and more satisfactory results and a "reef" or "granny" knot only is required being smaller than the ordinary surgical tie.

5. Horse hair *will not* bear any great amount of tension and could hardly be recommended for use in the flaps after a major amputation, except to place between other sutures for the purpose of more carefully approximating the skin margins.

6. After the introduction of horse hair, the skin being accurately adjusted and operation having been performed under the aseptic surgical procedures of to-day, except in extensive injuries, no dressing is required other than carefully drying the parts and brushing over with a layer of aseptic flexible collodion which, as it dries, will aid the horse hair in holding the skin in position.

With special reference to facial wounds, the field for the fastidious surgeon is here a great one, as horse hair at almost any hue of fast colors can be obtained, and he can place almost invisible stitches, from the color of the skin of the albino to that of the darkest African.

And now a word relative to the preparation of horse hair for surgical use: The convenience of the stable places it in every surgeon's hands and the hair needs only a thorough washing with soap and water, then for two or three days in 1 to 1,000 hydrarg. bichlor. solution and transferred to 95 per cent. alcohol until used. I believe that when this material is more generally used and appreciated that surgical supply houses will place it upon the market, and I have already made such a suggestion to one of them and without hope of future reward.

DISCUSSION.

Dr. R. S. Harnden, Waverly, N. Y.—The use of horse hair as a suture is to me a recent thing, and only by the advice of Dr. Daniels did I begin its use, something like a year ago. The Doctor gave me sutures at a meeting of the Academy of Medicine in New York. I tried it, and while I feel like praising the suture, I would at the same time speak of its

disadvantages. While it has many admirable qualities mentioned by the Doctor, the only objection to it that I could find is, that if you are not careful in using it in a wound that is likely to be attended with any tension, you will be disappointed in it as a suture. Bearing that point in mind, it is a valuable adjunct to our sutures.

Dr. J. F. Reger, Littleton, W. Va.—A year or two ago I picked up a copy of the *British Medical Journal* and saw something in reference to the use of sterilized horse hair for injuries of the face, and I have had an opportunity of using it three times. I have found one thing, that whatever degree of tension you give the sutures in placing them you will retain that same degree of tension throughout the healing of the wound, as it never relaxes a particle that I have ever found, and it makes absolutely no stitch scar. While there may be some disadvantages in connection with its use, I have not as yet encountered them. I have found it excellent material for face wounds where we desire to avoid an unsightly cicatrix.

Dr. A. C. Scott, Temple, Texas—When I was asked to discuss this paper, my first thought was to refuse to do it, inasmuch as knew so little about the subject. But I concluded that it would not be right to back down on an invitation of this kind, because I do not believe in backing down. I have never backed down but once in my life, and I do not want to do so in connection with the work of this Academy. I concluded that it would be better in attempting to discuss a paper of this kind to know very little about it in the beginning. One could receive the points in this paper as they were put forth with an unbiassed mind. However, as soon as I came to Chicago I went to one of the public libraries and tried to find something on the subject, but found it was exceedingly difficult to do so in order to get anything satisfactory out of it. I find that horse hair ligatures are mentioned as a sort of side issue whenever the subject of ligatures is under discussion. It is mentioned in one of our works as a sort of drain, but it seems to be very unsatisfactory as a drain. I do not believe the essayist mentioned it as a drain at all.

Dr. Daniels—I intentionally left that out.

Dr. Scott—For the purpose of drainage, I tried it some time ago, and it disappointed me in two respects: 1, I thought washing it with soap, and then boiling it for a while and dipping it into a solution of bichlorid of mercury would be sufficient to disinfect it. I was doing a Syme's amputation. To my surprise, I had more pus formation than I have had in a wound for many a day, and because of that fact the rest of the operation was watched very closely, everything rendered as aseptic as possible, and I can not help but think that the sepsis was due to imperfection in the horse hair.

2. That brought to my mind this thought, that when considering the use of horse hair we should take notice of the fact that it is subject to certain diseases, and if we are going to use horse hair extensively we will have to pay some attention to that one feature. It no doubt has some advantages. It is non-irritating when aseptic, and it leaves no scars. On that account it certainly has some advantages. Another advantage is that for surgeons who do a great deal of emergency work it is always easily obtained. In the case I speak of, where I used it for drainage in a Syme's amputation, in this instance, I had a beautiful result. I had no drainage tubes with me, and used the hair from my horse's tail which had been properly prepared before I had the operation completed. If the preparation I gave that was uncertain and the cause of suppuration in that case, I do not think it will do to prepare it so hastily as a rule. I have used horse hair in quite a number of circumcisions, and prepared it in those cases very much as the Doctor has suggested by washing it with soap first, then using the other disinfectants. I think the use of it is very limited, and should be, if it is used at all, confined to superficial wounds, particularly wounds of the face. Then we have to look very carefully for the tension which is apt to follow. I believe that one thing is the main bar to its use. The fact is that we have a certain amount of swelling in many of our wounds, and even if we have no swelling at all there is apt to be cutting of the tissues from it.

Dr. Reger—Just one word in reference to the preparation of horse hair. I have never depended upon simply washing the hair, but I have sterilized it by superheated steam prior

to using it, and I have never found it produce any sepsis whatever.

DR. DANIELS—I am very much gratified at the discussion that my paper has elicited. Dr. Harnden mentioned the point regarding tension. I also mentioned it in the paper. With reference to the preparation of horse hair, I will say that if it is properly and carefully prepared, thoroughly asepticized, the surgeon need not have any fear of sepsis following its use. In superficial wounds, where we can not place as many sutures of silk, catgut or silkworm gut in holding our flaps, we can use horse hair to excellent advantage.

On motion of DR. R. HARVEY REED, the chair appointed Dr. F. H. Peck, Clinton, N. Y., as sergeant-at-arms.

The election of officers having been made the special order of business at this session, on motion of Dr. F. H, Peck, the chairman appointed Dr. F. H. Caldwell, Sanford, Fla.; Dr. W. H. Meyers, Meyersdale, Pa.; Dr. C. B. Kibler, Corry, Pa., tellers.

On motion of DR. W. H. ELLIOTT, the Academy proceeded to ballot for officers without nomination.

The ballots for President resulted as follows: C. K. Cole, Helena, Mont, 18; H. J. Maynard, Cheyenne, Wyo., 3; C. M. Daniels, Buffalo, N. Y., 1; C. B. Parker, Cleveland, Ohio, 2; Scattering, 2.

On motion of DR. F. H. CALDWELL, the election of Dr. C. K. Cole was made unanimous.

First ballot for Vice-President: W. H. Elliott, Savannah, Ga., 5; C. B. Parker, Cleveland, Ohio, 1; J. H. Maynard, Cheyenne, Wyo., 1; F. H. Caldwell, Sanford, Fla., 1; R. S. Harnden, Waverly, N. Y., 2; John E. Owens, Chicago, Ill., 4; C. M. Daniels, Buffalo, N. Y., 12; L. E. Lemen, Denver, Colo., 3; F .H. Peck, Clinton, N. Y., 1; R. Harvey Reed, Columbus, Ohio, 1.

There having been no choice, a second ballot was cast which resulted as follows: Dr. W. H. Elliott, Savannah, Ga., 13; Dr. C. M. Daniels, Buffalo, N. Y., 16.

On motion of DR. W. H. ELLIOTT, the Secretary was instructed to cast the ballot of the Academy for Dr. C. M. Daniels for First Vice-President.

On motion of Dr. L. E. Lemen, the Secretary was instructed to cast the ballot of the Academy for Dr. W. H. Elliott for second Vice-President.

Secretary: The ballot for Secretary resulted as follows: Webb J. Kelly, Galion, Ohio, 21; L. E. Lemen, Denver, Colo., 1; R. Harvey Reed, Columbus, Ohio, 6; A. C. Scott, Temple, Texas, 2. Dr. Webb J. Kelly was declared elected Secretary.

Treasurer: The ballot for Treasurer resulted as follows: F. H. Caldwell, Sanford, Fla., 1; R. Harvey Reed, Columbus, Ohio, 8; John E. Owens, Chicago, Ill., 7; F. H. Peck, Clinton, N. Y., 1; A. C. Scott, Temple, Texas, 1; C. B. Parker, Cleveland, Ohio, 1; C. B. Kibler, Corry, Pa., 9; W. H. Meyers, Meyersdale, Pa., 1.

On motion of Dr. F. H. Caldwell, the Secretary was instructed to cast the ballot of the Academy for Dr. C. B. Kibler for Treasurer.

On motion of Dr. F. H. Caldwell, Dr. R. Harvey Reed, Columbus, Ohio, was elected Editor.

Executive Board: On motion of Dr. Milton Jay, Chief Surgeon, C. & E. I. R'y, Chicago, Ill., the candidate receiving the greatest number of votes would serve for four (4) years, the next highest for three (3) years, the next highest for two (2) years, and the next highest for one (1) year.

The ballot resulted as follows: John E. Owens, Chicago, Ill., 26; L. E. Lemen, Denver, Colo., 17; C. D. Evans, Columbus, Neb., 4; H. J. Maynard, Cheyenne, Wyo., 5; F. H. Caldwell, Sanford, Fla., 9; W. R. Blakeslee, Forest City, Pa., 1; F. H. Peck, Clinton, N. Y., 2; Geo. W. Crile, Cleveland, Ohio, 2; W. L. Buechner, Youngstown, Ohio, 2; C. B. Parker, Cleveland, Ohio, 17; R. S. Harnden, Waverly, N. Y., 14; A. C. Scott, Temple, Texas, 5; Chas. B. Fry, Mattoon, Ill., 1; D. C. Bryant, Omaha, Neb., 1; A. D. Bevan, Chicago, Ill., 1; S. G. Worley, St. Augustine, Fla., 1; J. G. Davis, Chicago, Ill., 1.

[In this ballot each Fellow had the right, if he so desired, to cast a ballot for four different Fellows to serve on the Executive Board.—Ed.]

On motion of Dr. C. K. Cole, Dr. L. E. Lemen and Dr. C. B. Parker decided by lot who should serve as three years, Dr. Lemen being fortunate, secured the three-year term.

On motion of Dr. R. S. Harnden, seconded by Dr. R.

Harvey Reed, Chicago was selected as the next place of meeting.

On motion of DR. CHAS. B. FRY, the Executive Board was instructed to name the date for the next meeting which they did by selecting the second Thursday, Friday and Saturday of September, 1895.

DR. GEORGE CHAFFEE, Surgeon, L. I. R'y, Brooklyn, N. Y., being unable to be present and his paper being in the hands of the Secretary, on motion of Dr. R. S. Harnden it was read and referred to the Committee on Publication.

SHOULD A RAILWAY SURGEON BE REQUIRED TO PROCURE A HISTORY AS TO THE CAUSE OF AN ACCIDENT OVER THE SIGNATURE OF THE INJURED?—REASONS OPPOSING SUCH REPORT.

BY DR. GEO. CHAFFEE.

SURGEON LONG ISLAND R'Y, BROOKLYN, N. Y.

It is understood that papers presented before this body are not written to advertise either the writer or this institution.

There are in railway surgery, as we find throughout the broad domain of medicine and surgery, many disputed points, many unsettled questions.

That stalwart fellow—the engineer—who, for hours at a time stands at his post on the engine, while the vestibule flyer is being hauled across great stretches of our country, knows very well the character of the track before him, the nature of the different grades and curves. So too, the captain of an "ocean greyhound" must know well the course over which his vessel must pass, to insure his passengers comfort and safety.

The railway surgeon, in turn, should not only have a fair knowledge of medicine and surgery, but he should as well know something of medico-legal questions; for the course over which his bark may drift is often quite rocky.

One object of this institution is to seek for Truth; another, is to see that Justice be allowed to sit supreme on her throne. If this institution should ever adopt a motto, let "Railway Surgery, Truth and Justice," compose not only the frame-

work, but the entire front, from the ground floor, up. Let us, then, ever be found ready to aid in working out difficult problems, in sifting the good works of others, in selecting truths and valuable facts for the advancement of railway surgery. I have said that in this line of surgery we have disputed points. Reference to our program will show that the topic under discussion is one of them, or this paper would not have been written.

Now I assure you, that the grounds I shall take, and the effort I shall make in the discussion of this question, are not for the purpose of outdoing my opponent in any respect. It is simply with a desire that we may after sifting, secure enough grain to establish a standard by which all may be guided in the future. I shall first follow a line of reasoning, or rather of inquiry, looking in the direction of the injured person.

THE INJURED PERSON.

Railway surgery compels us to give our first aid to the injured. So we will first consider the injured man. Now is it policy for corporation and surgeon to combine and place their work on paper and on the records of the court against an injured person? I think not.

So far, I have found little trouble in securing the full confidence of the majority of my patients, and, in the course of a few days, when they are able to talk, usually succeed in drawing from them a full and satisfactory history of their case, and this too, in a legitimate way.

In case of slight injury where the surgeon may detect a disposition on the part of the injured person to magnify his trouble and bring suit, is it not possible for him while taking the history of the case, to include in a general way, a statement from the patient as to the *cause* of the injury—to get the *truth*, which should be all he will require for the treatment of the case, for a clinical record, and for use as a witness? I think so.

One truth sworn to by either surgeon or patient, and corroborated by the other, is worth more than a thousand affidavits secured under pressure. Suppose the injured party testifies that he has refused to give his signature, and that he resented the kind offer of the surgeon? What effect will

such testimony have with the jury? Granting, then, that a signature has been procured by the surgeon, what effect will it have on the injured person? Will he not think that his surgeon is unduly exercised over his case, and will it not arouse *suspicion*, and at once suggest to his mind *litigation?* Will not such a course create a prejudice in his mind against the corporation, and will it not call forth unjust and unnecessary criticism from both friends and the public?

Having signed a paper and coupled with it delay, will he not feel or perhaps imagine that he has entered into bonds, or been drawn into a contract whereby he may have been taken advantage of, that perhaps his injury is even of a more severe character than he has been taught to believe, and, as a result—in some cases—may we not get anxiety, worry, and possibly a deranged condition of the mind? May we not aid in developing traumatic neurasthenia, or a hystero-neurasthenia, which will place the case in the hands of the neurologist, and which alone might eventually be the means of his bringing suit for many times the amount of the original injury? I repeat, that in some cases I believe it is possible for such a turn of affairs to take place.

I am aware that the last question which I have raised carries our investigation into a delicate field. Not only does it take up the physiologic element of the topic—the effect of grief, anxiety, worry and suggestion upon the mind, which in itself would furnish material for a paper, and which I do not care to discuss further, but it also involves the economic principle of compromise.

I will, however, offer in support of the opinion which I have advanced in regard to the psychologic and economic element of this question, a brief quotation from Dr. W. B. Outten's valuable paper on "Traumatic Neuroses:" "Compensation," as viewed by the writer, "does not possess the incidental elements of worry and harassment that obtain when litigation is indulged in. We are free to confess that in our views, the influence of compromise is great. It relieves the individual of all the attendant worries incident to litigation; its influence is in the direction of mild, normal and unruffled action." [1]

[1] R'y Surg., Vol. I, No. 7.

Again, granting that the surgeon has himself procured the signature of the injured party, suit is brought and the surgeon takes the witness stand with a history of the case over the signature of the plaintiff before him, and gives his testimony accordingly. Now, what effect will this surgeon's testimony have with the jury? I think the effect will be most damaging, both to surgeon and corporation.

Having, for the time being, disposed of our injured person, let us turn whatever power we may have left in our searchlight upon the corporation, and what shall we find? We shall find among the officers of the company a surgeon, an attorney, with some a claim agent, and with others, an adjuster.

THE DUTIES OF EACH.

Now for what purpose are these gentlemen employed?

1. The surgeon is employed to do surgical and medico-legal work.

2. The attorney or counsel is employed to do legal work, to try cases in court, to give legal advice, etc.

3. The claim agent, or adjuster, is employed to investigate all claims, to ascertain the causes of accidents, to visit witnesses, to secure all the information possible from various sources for the use of himself and the attorney, and last, but not least, to pay off claims.

I have briefly but clearly outlined the duties of surgeon, attorney and claim agent. Is it right, then, for a corporation to ask its surgeon to do the work of claim agent? The surgeon is employed, remember, to do surgical and medico-legal work. But I know you will ask, Is not this medico-legal work? Not strictly so. On the other hand, the *procuring* of a *signature* is a strictly *legal* procedure, having no medical status whatever; hence this fact carries the question under discussion outside of surgical and medico-legal lines, placing it in the hands of the company's attorney, or claim agent, where it justly belongs. The *cause* of an *accident* may be classed as surgical or medico-legal; but the procuring of a signature is quite another thing. It is purely legal and the work of the legal side.

I do not wish to be understood as taking the ground that it is wrong and never necessary for the *company* to secure

the signature of an injured person. Far from it! In certain cases it may be highly essential. That, however, is for counsel to decide, and, having decided, let him do his own work, and let the surgeon keep right on "sawing wood," or rather bones, if necessary. When a surgeon lays aside the agents placed in his hands for the practice of surgery he should, for the time being, lay off the title of railway surgeon, for he virtually steps across the line from surgery to law when he assumes the task of procuring the signature of an injured person. And although his pathway while doing this work may apparently be strewn with roses of the brightest tint and sweetest perfume, I am certain that he will find upon the witness stand a chair well upholstered with the sharpest of medical legal thorns.

TREATMENT OF BURNS OF THE CONJUNCTIVA.

BY D. C. BRYANT, M.D.

OCULIST UNION PACIFIC RAILWAY, OMAHA, NEB.

In order to come to any rational conclusions in regard to the treatment of any certain class of injuries, it becomes necessary to inquire into the nature, cause and results to be expected from the kind of wounds under consideration.

A brief glance at the causes and the conditions usually found in burns of the conjunctiva, and the consequences following them, will therefore be proper before entering into a consideration of their treatment. Before doing that, however, I will say that on account of location, direct continuity of tissue between the cornea and ocular conjunctiva, and the constant apposition of the palpebral conjunctiva with the cornea, these membranes are usually both involved in all burns of any consequence, hence in this paper the cornea will be included in the consideration of burns of this region.

Railroad employees, from the diversity of their work, take in nearly all the trades known to mechanics, and consequently are liable to any or all of the accidents common to men engaged in these pursuits and, among other injuries, burns of the conjunctiva and cornea are very common and arise from many different causes.

Among the most common agents are molten metals as ron, lead and Babbitt metals; hot metals (not melted) in

the shape of scales or chips of iron, chemicals either alkalin or acid, gunpowder in many forms, hot water, steam, hot ashes, hot cinders, in fact anything possessing the requisite amount of heat or caustic properties and coming in contact with the conjunctiva or cornea. On account of the quick closing of the lids, when danger approaches the eye, only a small portion of molten metal usually reaches the conjunctiva. Be this amount large or small, unless it has become so cooled in transit as to prevent, it is immediately spreading over the anterior surface of the eyeball by the tight grip out of the lids which the sufferer is unable to prevent. While this spreading of the hot metal increases its surface, and the extent of the injury, by its allowing quicker cooling of the foreign body, it diminishes the depth to which the destruction of tissue extends. Molten metal flying some distance before striking the conjunctiva, may become cooled and hardened sufficiently to retain its shape and yet be possessed of enough heat to produce a burn capable of bringing about the most disastrous results.

The burns from scales and chips of hot iron are usually more limited in extent than from liquid metal, but often extend to as great a depth. The most common among chemic caustics is lime in some form, usually in the shape of mortar, though I have seen a number of injuries from dry pulverized lime being blown or thrown into the eye, and quite recently have seen a case where one eye was destroyed and the other seriously burned by the lime in a so-called whitewash mixture. This accident happened in one of the Union Pacific shops where three of the employees were whitewashing with a steam apparatus used for this purpose. One of the pipes burst, throwing the lime into the eyes of all the men around the machine at the time, but destroying only one eye, as above stated. The burns received by the other men, though painful, involved only the superficial layer of the cornea and were not serious.

Of the acid caustics strong sulphuric, nitric, muriatic and nitro-muriatic acids are the most common. A very small drop of either received in the conjunctival sac is capable of producing very serious consequences to both cornea and conjunctiva, before it loses its destructive power from dilu-

tion by mixing with the fluids of the conjunctival sac.

Powder in all of its forms, from the common black gunpowder to the most powerful nitros, are used in different ways by the men in the employ of the railroads, and accidents of all kinds arise from the careless handling of them. Burns from this cause range all the way from the slightest injury of the conjunctiva or cornea to the complete destruction of both these membranes.

Whatever the agent in the case may be, the amount of damage done and the results to be expected to follow will depend upon the location, extent of surface over which, and the depth to which the destructive process has extended. If the injury implicates the cornea the damage to vision will depend upon the depth and location of the burn, as if it extends deeper than the epithelial layer a scar is sure to be left whatever the treatment may be. If the injury be small and situated in the center of the cornea great damage to vision will be done, and if of large size—involving all or nearly all of the surface of the cornea—the vision will not only be lost but the extent of the scar will preclude its restoration afterward by any operation. The burns situated in the conjunctiva are not of so much importance, if the destruction be confined to either the ocular or palpebral portion alone, but as this rarely happens where the wound is at all extensive, we usually have to deal with two raw surfaces constantly in apposition. The result of the healing process in these cases is the more or less close and extensive union of the lid and eyeball, and in some cases the union is so extensive as to entirely destroy the conjunctival sac.

From this hasty review of the cause, effects and final results of these injuries, it becomes apparent that a rational treatment, to meet all conditions, should be divided into three stages; the care of the injury itself, the management of the healing process, and operations for the correction of bad results. The first would include the time from the receipt of the injury through the first few days following, until the dead tissue has all separated and sloughed away. The second stage would extend from the end of the first period to the point where the healing process has been entirely completed, and the third and last would be after the

completion of the second stage when the skill of the surgeon may be called upon to remove or rectify the results of the injury, or of the healing process, or of both.

The treatment in the first stage will include the checking or relieving the pain, the removal of the foreign substance, and the cleansing and dressing of the injured parts.

Relieving the pain is purposely put before the removal of the cause in these cases, for the reason that it is almost impossible to even examine a patient suffering from these injuries, let alone the removal of foreign material from their eyes, before the pain is relieved. With many patients, and in the less severe cases, cocain applied locally will be found a very effective remedy in relieving the pain, so that the further steps of treatment in the first stage can be proceeded with without hindrance, but in severe cases and with the more timid patients a general anesthetic, as chloroform or ether, will be found necessary. While under the influence of the anesthetic the injured parts should be carefully examined and everything of a foreign nature removed. If the burn be caused by any of the metals, or lime, all small particles should be carefully sought out and removed, and this is sometimes a very slow and tedious process where many small particles are embedded in the substance of the conjunctiva or cornea or both, but this part of the work must be thoroughly done, for the minutest portion of foreign substance left will certainly act as an irritant and increase the amount of inflammation and ulceration to follow. After every particle that can be found has been removed, the conjunctival sac should be freely washed out with some aseptic fluid, one of the best of which is sterilized water, either pure or with the addition of boric acid. When the cause of the burn is some liquid substance, thorough washing will be sufficient unless the agent be an acid and the patient seen very soon after, or at the time of the injury, when a weak alkali added to the water would no doubt be of some service in neutralizing the acid remaining in the conjunctival sac.

In dressing these wounds, after cleansing, the chief principle observed in the dressing of burns in other parts of the body should be observed; that is, the exclusion of air.

Burns in this locality are very favorably situated for the carrying out of this principle, as the mere closing of the lids does this pretty effectually. Although the lids are of service in this respect they are capable of causing much damage in other ways. The continual rubbing of the palpebral conjunctiva on the cornea or the ocular conjunctiva, in winking, would seriously interfere with the healing of any broken surface on either. To obviate this difficulty, as well as to add further protection from air, a light compress of borated cotton and a gauze bandage should be applied. Before applying the bandage a little vaselin, olive or castor oil, should be dropped into the conjunctival sac to act as a lubricant, and also to separate the broken surfaces to a greater or less extent. Of these agents, I find the castor oil is the most bland and the least easily absorbed.

If the burn is extensive and the cornea involved, atropia should be added to the oil, both for its effect on the cornea and to prevent or subdue the iritis which is pretty sure to follow any severe burn of the cornea. The dressing can be removed and the drops repeated every four or five hours as needed, and at such times all pus and sloughs should be wiped away with pledgets of cotton soaked in saturated solution of boric acid. For the first forty-eight hours after the receipt of the injury, I have found a small bag of broken ice applied over the bandage, the greater part of the time, to be of the greatest service in limiting both the swelling and the inflammation. To control the pain following these burns, a hypodermic injection of morphia or morphia by the mouth should be given. No reliance can be put on cocain as recommended by some writers for this purpose. The careful cleansing with aseptic lotions, and the complete rest procured for both the lids and the eye itself by the use of the bandage, and the atropia and application of the ice-bag, comprise about all that can be done to check the inflammation, limit the ulcerative process so liable to follow or attend the sloughing of the dead portions of cornea or conjunctiva, and hasten the beginning of the second or healing stage.

With the beginning of the second stage the treatment changes to a considerable extent, as the objects to be at-

tained here are very different from those in the first stage. Here we desire to hasten the healing process, check further destruction of tissue by ulceration and prevent as far as possible the formation of adhesions between the lids and eyeball. The use of the bandage should be continued, as well as the oil and the careful cleansing of the granulating surfaces. Just how much can be done to prevent the formation of adhesions is something of a problem.

My own experience in these cases, and I have seen many of them, has taught me to believe that little good is accomplished by any of the methods given in the text-books to prevent this dreaded result, except in the cases where the burned surface is not large or is situated near the margin of the lids. In these mild cases the breaking up of the adhesions by passing a strabismus hook around them and forcibly separating the adhering surfaces at each dressing has, in several cases that have come under my care been of great benefit, in some cases preventing union entirely and in others making the uniting band so small as to be very easily removed by operative procedures afterward. Of late, however, I have adopted a plan that in my hands brings about much quicker and better results than any that I have seen advocated. It may have been used by many others before me, but if so I have failed to find any mention of it in print. This plan consists in treating the burns in the ocular conjunctiva, (at the end of the first stage) the same as any other wound causing a solution of continuity of that membrane would be treated, that is, separating the conjunctiva from the sclera round about the burn to an extent sufficient to allow of the bringing of the edges of the conjunctiva together and uniting them with stitches. The unbroken surface presented by the shifted portion of the ocular conjunctiva prevents any union between that and the denuded surface of the palpebral portion of that membrane, which is then left to itself to heal by granulation. The loose connection between the conjunctiva and sclera allows of very great displacement of this membrane and one is often astonished at the size of the wounds that can be covered in the way above mentioned. Time and trouble are saved to both patient and surgeon, and fully as good if

not better results obtained than would be by following the old rule of letting the adhesions form and then removing them by plastic operations.

In cases where the amount of conjunctival tissue destroyed is so great that the above method can not be used, I have for some time been in the habit of employing skin grafts to cover the denuded surface not, as suggested by text-books, at the *end* of the healing stage, but at the *beginning*. As soon as the dead tissue is cleared away, the conjunctival sac is thoroughly cleansed with warm boric acid solution and Thiersch's flaps or grafts applied to the raw surface. The compress and bandage are then re-applied and left undisturbed for twenty-four hours when the dressing is carefully removed and the lids separated sufficiently to allow the escape of whatever fluid may have collected in the conjunctival sac.

As every one knows who has tried skin grafting in this region, the chief cause of failure is in the amount of moisture or secretion that collects in the conjunctival sac. This is less at the beginning of the second stage than later, when the denuded surface is covered with more luxuriant granulations, hence the propriety of using the grafts as early as possible.

If the first set of grafts die wholly, or in part, another attempt should be made with as little delay as possible. By freshening the granulating surface, (by scraping) these attempts can be repeated until success crowns the effort, or the healing process shuts out any further opportunity.

In many of these cases the grafting will prove successful and the formation of adhesions be prevented, but in those cases where this part of the treatment proves a failure it leaves the conditions no worse for the third stage than they would otherwise have been.

The treatment in the third or last stage aims at the correction of the defects produced by the injury or the healing process following These conditions may be such as to call for an enucleation to stop the constant irritation caused by adhesions between lids and eyeball, or to prevent sympathetic trouble where the burn has involved the deeper structures of the eye; an amputation of the anterior part

of the globe so that a shell can be worn to cover up unsightly scars: an iridectomy to improve vision; a plastic operation to remove adhesion between eyeball and lids or between the lids themselves; or for an operation to correct an entropion. In these cases each individual one is a study in itself and no certain rules can be laid down for their management. The skillful operator can here have his ability and patience tried to the utmost, and then after bringing all known resources into use may still score a failure. But with patience and perseverance in the performance of whatever operation the particular case in hand may call for, the results in many cases are sufficiently good to satisfy both the patient and surgeon.

Even if the vision of the injured eye is lost, many dollars can be saved the railroad company, and the patient himself be much better satisfied, if a fair *appearing* result can be obtained. Nothing enlists the sympathy of the jury more, and consequently increases the amount of damages awarded, than an unsightly appearance presented by the complainant. For the benefit of both the patient and the company that foots the bill, as well as for his own reputation, the railway surgeon should treat these cases with patience and perseverance, even when no benefit except from a cosmetic point of view can be expected.

DISCUSSION.

DR. PECK—In connection with this paper I desire to report a case which was interesting to me, and one which I consider unique. The case was that of a miner who was standing directly in front of an exploded dynamite charge, and received the full force of the explosion in his face and upper extremities. Both hands were burnt off to the wrists, and there were serious burns on the face, head and eyes. As a result of the burns of the cornea, there was extensive sloughing of both corneæ and in one of them there was perforation with disorganization and extrusion of the lens and escape of both aqueous and vitreous, so that when I dressed his eyes one day, I found the entire anterior segment of the eyeball inverted in a conical or funnel shape. To my surprise, after a few days the perforating ulcer healed, the contents of the eyeball filled out again to its

normal shape or nearly so, and the man had perception of light with that eye.

DR. HARNDEN—I have received a good deal of comfort from this paper, for the reason that some years ago in a plastic operation of the face for a burn, there was cicatricial contraction, and I adopted a measure for which I received a great amount of censure from some of my confrerés. I stitched the lids of the eye together, and I stitched the upper lip down to the chin, drawing them down by sutures, and to my surprise there was cicatrization. I did a plastic operation which healed without the usual contraction, but I made incisions, separated and dissected out the tissues, leaving a pedicle, and the sutures held the lid which had been drawn down to an unsightly condition, and the upper lip having broadened out to the margin of the ala of the nose, great deformity was prevented. The man was a banker, and with the exception of a false mustache which he has to wear on that side to match the other side, you would scarcely notice that he had been so seriously burned. Compared with the deformity he had, it was a great improvement. I was blamed for doing this operation, as it was considered by some an unprofessional act.

NOT A CASE OF "RAILWAY SPINE."

BY WEBB J. KELLY, M.D.

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Railway surgery without the spinal malinger would be like a ship in mid-ocean bereft of her sails and her rudder. It is a question too, if we would not all lose our jobs if he did not exist; although it is claimed that our employment is a matter designated as being for sweet charity's sake, the court records show that the charity part of it is very much similar to the chuch donation of a candidate for a political office—sort of a "cast your bread upon the waters" affair.

It has been my privilege to examine and assist in the caring for many cases of spinal injury, and I might add, numer-

ous cases of "supposed spinal injury." Out of the list, I wish to call your attention to four cases that have seemed to me to be very interesting, inasmuch, as they pretty well cover the different forms of injury sustained by the spinal column, namely, fracture without displacement, complicated with severe injury to the soft parts, resulting in recovery; apoplexy of the spinal cord, resulting in death; fracture with displacement, resulting in death; fracture and dislocation, resulting in good recovery.

Case 1.—S., aged 19; Irish; scrofulous; has had large abscesses on both sides of the neck; no history of syphilis, either hereditary or acquired; not an employee of the company. Please remember this.

In attempting to step on the front end of a moving switch engine, he misjudged the distance and went under the engine, being rolled between the front trucks until the engine could be stopped, which was probably a distance of thirty feet.

Examination a few minutes after the accident occurred revealed a comminuted fracture of the right forearm, about two inches above the wrist; contusion of inside of left foot; dislocation backward of left hip, with fracture of the acetabulum; the spinous processes of the lumbar vertebra were simply crushed flat, with slight curvature of the spine to the right. The soft parts over the lumbar and upper sacral region were badly contused and fairly bagged with coagulated blood. There was no paralysis of the motor or sensory nerves affecting either the limbs, bladder or rectum. The case progressed nicely. The coagulated blood was taken up, and with the exception of the deformity resulting from the hip injury, he is as well as ever. This would have been a typical case of "railway spine" had not the patient been wholly responsible for the accident.

Case 2.—H. T., aged 36 years, well developed, strictly temperate. July 3, 1880, his carriage was struck from behind by a runaway team, and he was thrown a distance of thirty feet, alighting on his head and shoulders. In company with my father, Dr. H. R. Kelly, I saw the case one hour after the accident occurred. He was conscious, and had been ever since the accident happened; there was a large scalp wound

of the posterior part of the head, but no indentation of the bone; complete paralysis of the lower and partial paralysis of the upper extremities. The paralysis of the lower was of both motion and sensation, and was entire; that of the upper was only partial, and was more marked upon the right than upon the left side. There was also very slight paralysis of the intercostals. Failed to find any fracture or displacement of the vertebræ. However, about the seventh cervical there was some tenderness and a slight amount of ecchymosis. He suffered very little pain, in fact all the pain he had was occasioned when his head was considerable elevated. Diagnosticated the case as one of apoplexy of the spinal cord, and the prognosis unfavorable.

Dr. Rosenthal, in his excellent work on "Diseases of the Nervous System," in speaking of apoplexy of the cord says: "Consciousness, speech and the functions of the special senses are frequently unaffected. It is only in abundant hemorrhages of a rapid course, and especially in those of the cervical region, that momentary loss of consciousness occurs. The paraplegic limbs most frequently also lose their sensibility. The anesthesia usually extends upward to the upper half of the back and of the abdominal region. Reflex excitability is preserved or even increased at the beginning, but it rapidly disappears when destruction of the cord occurs in a transverse direction, and especially in the gray matter. The paralysis also involves the sphincters; retention of urine and constipation occur in the beginning, but are soon followed by involuntary evacuations. The muscles which are insensible to mechanical stimulation and to the will, have also lost their electrical contractility. Cline has observed this abolition of muscular excitability upon the very day of the attack. Bed sores and erythema make their appearance. When the fatal termination is delayed, it is caused by progressive extension of the paralysis, by abolition of the vegetative functions, by bed sores, cystitis, pyelitis, and the final febrile exacerbations which accompany these complications. The duration of the disease may be counted by hours, weeks, or even months."

July 4. Found him in about the same condition to-day as yesterday. He has not evacuated his bladder. As he suffered

a rupture of the urethra about a year ago, we at once attempted to pass a rubber catheter but failed. We then tried several catheters but were unsuccessful. The stricture had closed down very tightly, and there also seemed to be a curve in the canal through which it was impossible to pass anything. Being afraid of wounding the paralyzed urethra, we desisted and left him until the following morning.

It was now nearly forty-eight hours since his bladder had been emptied, and as we were again unsuccessful in introducing a catheter, we thought it best to resort to aspiration. The needle of a Dieulafoy aspirator was plunged into the bladder about two inches above the symphysis pubis, and about two quarts of urine withdrawn. The operation was an entire success, as not a single bad symptom followed.

We succeeded next day in breaking through the stricture with a No. 8 Van Buren and Keyes' silver sound. After which a catheter was successfully introduced, and his wife,—who, I think, was the best nurse I ever saw—was able to catheterize him from this on. Once in a while the parts would become more relaxed, at which time there was a continuous dribbling of the urine, and at these times his sphincter would become very much relaxed. Although we were very careful with his bedding a large bed sore made its appearance over the sacrum. It was surprising with what rapidity these paralyzed parts sloughed out. He remained in this condition until August 13, when he was taken with a severe chill followed by a high fever. His friends were very anxious for counsel and Dr. Hamilton, of Columbus, was sent for. After carefully examining the patient, he was unable to give any hope for recovery. Patient remained in about the same condition until September 23, when he died. On account of the great sloughing, nearly every one of the lumbar vertebræ and the sacrum were exposed to view. Until the second day before his death, there had been no operation of the bowels for sixteen days.

Necropsy.—Twelve hours after death, in company with Dr. Ridgeway we examined the vertebral column and his spinal cord with the following result: Beginning at the cervical region extending to the first lumbar, we were unable to discover any fracture or displacement of the vertebræ. The

membranes were found to be in almost normal condition until we came to the eighth dorsal, where they became very much thickened and hardened. When the membranes were divided and the cord itself exposed, a different state of affairs was found to be present. Beginning with the first dorsal and continuing throughout the whole length of the cord, it was found that there had been complete degeneration from the first to the fifth dorsal, the gray more than the white, and more upon the right than the left side. The cord was so soft that we were compelled to be very careful in handling, lest we might not be able to finish the examination. From the fifth dorsal to the terminus it was very hard and when cut open gave that characteristic sound produced by cutting a scirrhus cancer. About the third or fourth, and also at the seventh dorsal vertebræ, were evidences of a hemorrhage. These spots were distinctly marked. As we were not prepared to examine the specimen microscopically, this was all that we were able to learn from the examination.

Although this case, strictly speaking, was not one of railway injury, it was just such a case as might occur at the time of a collision.

Case 3.—F. M., aged 36 years; German; switchman; moderately good habits. In attempting to get on back end of switch engine, the hand hold pulled out and he went under the engine. The engine was stopped as soon as possible, when it was found necessary to uncouple the tank from the engine to get him out, as he was wedged in back of the fire box. I saw him a few minutes after the accident occurred and found the following symptoms:

Complete paralysis of both sensation and motion below the dorsal region; complained of sharp pains and tingling sensation extending to soles of feet. Examination of spinal column revealed an apparent separated condition between last dorsal and first lumbar. The first lumbar seemed to have a fracture extending through the body, causing some compression from the left side. I use the term, seemed, for the reason that the fracture was not perfectly plain. The last dorsal was dislocated forward. The space intervening between the vertebræ was the width of the thumb. The case progressed from bad to worse, cystitis in an aggravated

form starting up about the third week. The limbs became edematous. Ulcers formed over the sacrum, thighs, calves of legs, and the feet themselves almost separated from the body. The man lived for several months, finally dying from sheer exhaustion, after wasting away to a mere skeleton.

A post-mortem examination was not permitted, as the family desired to bring suit for damages, which they afterwards did, recovering something like four thousand dollars.

Case 4.—This case came under our care while I was absent from the city, and I am indebted to Dr. H. R. Kelly for the early history. T. N., aged 23 years; engine-wiper; good habits; formerly farmer. Was down under engine wiping when hostler attempted to move the engine. He was doubled up and wedged under the engine in such a way that it was almost impossible to get him out without jacking up the engine. Examination revealed a dislocation backward of last dorsal vertebræ, the deformity being fully one-half inch. The first lumbar was fractured through the body. There was paralysis of the motors below second lumbar nerve roots, which affected the bladder and rectum to a certain extent. The sensory system seemed to have escaped. It was necessary to use the catheter for about three weeks; very little dribbling of the urine, however, ensued. Great difficulty was experienced in moving the bowels. The knee jerk was present. The case progressed favorably and at the end of several months he was able to get around some. At this time, some ten years since the accident, he is able to work at the carpenter trade. I find pronounced lateral curvature which is so distinct that it is noticeable even when he is dressed for the street. The gait is straddling and labored. The sensations are good, and I am told his only difficulty is in locomotion.

This, gentlemen, is a brief history of four cases that have interested me, and I hope will call forth the experience of many other surgeons. The treatment has been purposely omitted in these cases, as it was the intention to show only the symptoms in certain conditions.

DISCUSSION.

Dr. Milton Jay, of Chicago—Any surgeon who has had much to do with railways for any considerable length of

time must have had some injuries that involved the spine. To the railway surgeon the name of "railway spine" is a deep term, and I believe it is no longer used, for the reason that it is made to cover all injuries of the spine up to traumatic neurasthenia. It is easy enough to give a name, but to determine the exact condition of an injury to the spine is frequently exceedingly difficult, and it requires a high order of skill and of scientific attainments to accurately diagnose spinal injuries in the majority of cases. We can have as many different kinds of spinal injuries as of any other organ of the body. We may have injury or involvement of the posterior or lateral columns of the cord. Nowadays a knowledge of physiology and of the pathologic conditions will enable us to determine whether or not the spinal cord is injured. If there be complete paralysis of any part it is positive evidence that the cord is injured, or else there is compression of the cord either by an effusion of hemorrhage cerebro-spinal fluid or by compression of bone. I believe it is the duty of railway surgeons, when there is anything like paralysis of the spinal cord, to investigate very closely at the seat of injury, provided that injury has been along the spinal column, to know if the compression consists of a depressed portion of the vertebræ. If so, it is good surgery to elevate the depressed portion; I do not care whether it is the lamina, the transverse or spinous processes. If absolute compression exists, the paralysis can not be relieved until the depressed fragments are elevated. If there is an effusion, tap it. If the spinal cord itself is injured, that ends the case. The spinal cord, when severely injured or torn asunder, presents a condition that we can do nothing for.

As railway surgeons, there is nothing that is probably of so much importance as the medico-legal aspect of spinal injuries. Out of twenty cases of lawsuits brought to recover damages from railway injuries, fifteen of them will claim to have sustained injury to the spine, even if the spinal cord has not been touched. In these cases we should make a careful scrutinizing examination, using the battery with a view to testing the presence of the jerks and reflexes, or the absence of any of them. These examinations should be made

as early as possible, and the railway surgeon should be prepared when the trial takes place.

Dr. Reger—I infer from what has been said that in those cases in which there is paralysis after injury to the spine that they never fully recover their functions. I had a case two years ago of a young man who finding that he was going to fall, jumped off from the top of a rapidly moving train and fell with such force that it necessitated amputation of the right leg. The bones were driven through the soft parts. Paralysis of the lower extremities accompanied it—I mean paralysis of motion, but not of sensation. Any artificial motion would produce the most agonizing pain in his case, yet he did not appear to move a single toe. There was a perpendicular fracture of the first two lumbar vertebræ, and the displacement was almost the fourth of an inch. I could feel it distinctly. He was a very lean subject, and after the amputation of that limb I supposed the case would go on from bad to worse until he died. I applied a couple of narrow padded boards about four inches long to each side of those vertebræ, so that the weight of his body would press the parts together, and applied a plaster bandage over the parts. About four weeks after that was done he began to move the toes of the left foot. He kept on moving the limb, and continued it for over a year, and finally got entirely well. I suppose in this case it was simply an effusion that pressed upon the cord, and that no part of the bone had touched the cord or its membranes.

Dr. Jay —Where was the fracture?

Dr. Reger—The first and second lumbar vertebræ.

Dr. Harnden—I have an idea that this subject is pretty well threshed out, and that I can add very little to what has been said, but I wish simply to call attention to one quotation which I made in my paper, that of Dr. Pope, of a collection and tabulation of 120 cases of spinal injury, in which 99 out of this number, he said, were tinged with the coloring of imposition. I think the subject has been very thoroughly handled of late; it is still engaging the attention of the surgical world, and I believe the more we study this subject the more will it be demonstrated that this element of imposition or fraud is a powerful factor in these cases, and that we

should as railway surgeons study to eliminate this element as far as possible. During the war, through some method or process, I know not what, we killed off and buried out of sight the whole element called general debility. We have not heard of it in recent years, and I think now through an evolutionary process we are going to kill off the neurosis called "railway spine." Probably Erichsen never did a more foolish thing, or one which will dim the luster of his renown in the ages to come, so much as the one thing of inventing the term "railway spine." No physician uses it by itself today. I think, beyond any question, that the railways will be greatly benefited through the efforts that have been made by railway surgeons during the past three or four years to illuminate this mysterious subject. I think it is the common experience of the medical gentlemen present to meet with this bugbear in their private practice. A man or woman falls down on a slippery sidewalk, and has prospective damages in view against the corporation of the city. Immediately follow the symptoms, which are developed as a general thing by auto- or hypnotic suggestion or otherwise. The patient will complain of pain in the back, which is the primary symptom usually met with, and although he does not strain the ligamentous attachments of the spinal column or at any rate, the muscles of the back, the lumbar muscles, or otherwise, yet that symptom is of importance, developing into something tangible. It is our duty in railway injuries, especially as surgeons in attendance upon these cases, to be on the alert, to be cautious and quick to detect the incipient symptoms of this "spook."

Dr. Scott—This paper should have brought out, I think, more discussion in regard to genuine injuries of the spine, and I only wish I were better prepared to discuss it. We must not lose sight of the fact that we do have genuine injuries and serious ones of the spine; that many of them are fatal within a short time. Many of them produce permanent injury, and the Doctor has given us reports of some cases of that character. I have found in my State among railway surgeons that there is a tendency, whenever they run across an injury of the spine, to throw it off and class it among those cases which have been under discussion so much in

railway organizations during recent years, and in many instances overlook actual injury to the spinal column or to the spinal cord. We must remember that injuries to the bones of the spinal column, injuries to the ligaments, muscles and membrane are not uncommon, and I think that we should certainly give them due attention. I remember a case in point that I had a little over a year ago, of a man who was struck in the spine in the center of the dorsal region by the drive rod of an engine. The engine was running backward at the time. I thought from appearances he was suffering from a contusion, but shortly after paralysis developed, very much as that described in some cases of concussion of the spine. I was inclined to think, on account of some remarks the man had made, that he was assuming these symptoms of paralysis, but I afterward found that he was not doing so. He finally developed spondylitis. I was fully convinced that here was a genuine injury. I believe such a mistake is not uncommon among railway surgeons. We should remember that in these genuine injuries of the spine the prognosis is not always grave. A man will recover every now and then from a fracture of the vertebræ. They not infrequently recover from the effects of hemorrhage within the spinal canal provided the hemorrhage is not within the spinal cord itself. I do not believe there are any authenticated reports of cases of hemorrhage within the spinal cord where recovery has followed, that is, where it is within the tissues of the spinal cord; but from hemorrhage and effusions within the spinal canal between any of the membranes, we have every reason to believe that recovery takes place and it is not infrequent. I can recall two or three instances of complete paraplegia where recovery resulted, and where I had reason to think the paralysis was due either to hemorrhage or to effusion.

COMPARATIVE VALUE OF PLASTER-OF-PARIS AND SILICATE OF SODA, AS A DRESSING FOR FRACTURES.

BY MILTON JAY, M.D.

CHIEF SURGEON. C. & E. I. R'Y, CHICAGO, ILL.

Plaster-of-Paris, and silicate of soda are both valuable agents in the treatment of fractures, when skillfully used by

the experienced surgeon; and we soon become so familiar with the use of such common agents as these that we are likely to imagine that any one can readily and in a proper manner apply either of these bandages to any and all kinds of fractured limbs. But because of the careless manner and unscientific way in which inexperienced persons use either the plaster-of-Paris or silicate of soda in the treatment of fractures many failures and results that are not satisfactory are recorded. The first question should always be, Do *we know how* to use any agent or instrument successfully before we condemn it? It may be a failure in our hands, and yet a success in the hands of one experienced. It will not do to condemn or extol an agent or instrument as being good or bad upon a single trial, or upon the authority of a single person; it may require experience to enable a good surgeon to discover the good or bad qualities of an agent, instrument or appliance. I have more than once attempted to use an instrument or surgical device (with which I was not familiar) denounced it as worthless and laid it aside but after seeing it used by an experienced hand it appeared to be perfect. I have tried again and succeeded, came to the conclusion that it was just the thing, I had learned how to use it. This same rule holds good in the application of bandages in cases of fractures. No *one splint* or *one* kind of bandage will do for all kinds of fractures. Different kinds of fractures, as well as fractures of the same kind in different parts of the body, require a splint or bandage well adapted to each individual case.

I am satisfied that the plaster-of-Paris splint when properly applied will fill more indications and be applicable to more kinds and a greater variety of fractures than any one agent in surgical use. The silicate of soda (or liquid glass, as it is sometimes called) is clean, neat, and very fine for small bones. It is easily applied and makes a beautifully light splint or fracture dressing; there is nothing untidy or unclean about it, hence as a dressing for the fastidious, who insist on having everything neat and clean, whether sick or well, this is a very desirable dressing for the smaller bones. But as an agent that is to be used in the treatment of fractures generally, it will not compare favorably with the plas-

ter-of-Paris, which will set or become firm and permanently fixed much sooner than silicate of soda, which dries very slowly and requires a long wait before it becomes firm. In compound fractures, or where an opening is necessary to treat a flesh wound, the plaster-of-Paris is the preferable bandage. One can also succeed better with the plaster-of-Paris, when the surface is irregular or uneven, or where a joint must be included in the bandage. In all cases of railroad fractures except it be of the fingers, you will succeed best with plaster-of-Paris. In fractures of the femur in upper third when it is necessary, in order to fix the short fragment, to include the pelvis as well as the leg in the bandage, the plaster-of-Paris is the only agent out of which to make a perfect dressing. In all injuries about the spine, when it is necessary to secure fixation no agent acts so perfectly as plaster-of-Paris. In general surgical practice it would be very difficult, at least, if not impossible, to find a substitute for it; while silicate of soda is very convenient at times, and makes a fair substitute in certain cases, yet we could dispense with it altogether without much inconvenience.

Some surgeons have advocated the use of silicate of soda for the reason that it is always pure and clean and aseptic. I have never had any trouble in securing plaster-of-Paris which was not strictly pure and clean. I always use dental plaster and prepare it myself when I am ready to use it. I have never had any trouble from either in this respect. I think that there is less trouble in removing a cast or bandage of silicate of soda than plaster-of-Paris, and you do not litter up the surroundings as you must do with the removal of a plaster-of-Paris cast. But this is of little consequence, when compared with its efficiency.

There is what is known as the Bavarian splint—a hinge splint—used for fractures of the leg near the ankle, or including the ankle and foot which is easily and conveniently made of plaster-of-Paris but very difficult to make of silicate of soda.

For bandaging the head in cases of injuries when it is necessary to secure fixation as well as cleanliness, I prefer the starch bandage to either the plaster or the silicate. Hence

I argue that by experience in the general practice of surgery, we learn to use a variety of ways and means to adjust and keep in apposition the multiplied varieties of fractures which we are called upon to treat. In some cases we use splints, in some bandages, in others neither splints or bandages. I like the ingenious surgeon who can and will devise something new, if he can not readily secure the old favorite with which he is familiar. Many times a hastily devised appliance in case of emergency has proved to be a valuable acquisition to our surgical armamentarium.

DISCUSSION.

DR. HARNDEN—Dr. Jay has called attention to an important point. I know some men who call themselves prominent surgeons who use silicate of soda in cases of fractures of the larger limbs. I was called in six months ago to assist a confrére in applying a silicate of soda dressing to a fracture of the femur in a child about 10 years of age. The child was subject to convulsions and I protested to the doctor against using silicate of soda, although he said it was all right, and he preferred it to plaster-of-Paris. I assisted him in using it under that protest. The limb was badly deformed, and it was caused, the doctor says, by the convulsions, the limb being drawn out of shape before the silicate of soda had thoroughly hardened. I call attention to that point. The Doctor has brought it out very nicely.

DR. WEBB J. KELLY, of Galion, Ohio—Dr. Harnden's remarks bring to my mind a case I saw two or three years since that involved a considerable amount of money, and the treatment was questionable. A passenger on our Southwestern Limited stepped off of the back end of the train and had one limb badly injured about the knee. His home was in St. Louis, he having a brother there who was a practicing physician. He came under our immediate care. We dressed the limb with plaster-of-Paris, applying the dressing nicely, and then telegraphed for his brother. His brother arrived the next morning, examined the case, said the dressing was too heavy, and that there was no sense in using such a dressing. He took off the plaster-of-Paris and applied silicate of soda. In one hour thereafter the patient was placed on a cot and taken to St. Louis, and only a short

time ago I was told that in about three or four months thereafter the man died. His death involved a point that came up with his insurance, whether he could have died from that injury, or whether it was the injury sustained in connection with moving him with this light dressing on, some seven or eight hundred miles. There were two accident companies represented in the case and they fought it vigorously, so that the heirs never got a cent. This is a point that nobody ever thought of.

DR. PARKER—I will suggest one point in regard to the use of plaster-of-Paris. I recognize the usefulness of such a dressing, as we all do. I also have found in my own practice that it is not well to apply it immediately in some of the severe injuries we are called upon to treat. I have waited a few days, applying some temporary dressing until the swelling has reached its height, then applying the plaster-of-Paris dressing. In children there is no question of plaster-of-Paris setting quicker, and in fractures that are still movable, it is a more rapidly setting material than silicate of soda. I have been in the habit for a long time, in order to make my plaster bandage lighter, of using pasteboard. You know how easily this material can be torn. It is not necessary for you to cut it with the scissors, but you can tear it easily and use it in connection with your plaster. There is one point I would suggest for your consideration. Possibly you have observed the same thing. It is a frequent custom with surgeons to take a case that has been in splints, where there is a good-sized callus, and put on a plaster bandage, and on the fourteenth day or so allow the patient to get up. I have noticed in those cases that when the bandage is opened at the end of fourteen days or more that the callus has almost entirely disappeared and union had not taken place, although when it was put in the cast there was every evidence that union was taking place. The callus was ample and the indications were that union was taking place. I have a theory to suggest for that which is this: I think the pressure of the bandage on all sides upon the nutrient vessels interrupts or disturbs the normal nutritive action and arrests the callus-forming process. I have seen this a number of times and I have no better explanation for it. I have seen

the callus disappear very largely and union delayed. If the limb in these cases is put back into a Volkmann's splint or some apparatus of that kind, in another ten days the leg is solid. On the other hand, I have seen union delayed where Buck's extension has been used on the femur, whereas if the patient's limb is put in a plaster-of Paris dressing union takes place. It is in those cases where there is a good-sized callus and the bandage has been applied snugly, all swelling having disappeared, that the plaster-of-Paris dressing delays union. I call attention to one method of using plaster-of-Paris in spinal injuries because we all have them to treat more or less. I have found the hammock method of applying a plaster jacket to be very advantageous. I make it a rule invariably in spinal injuries to apply a light jacket, because it is impossible to think of suspending patients in a Sayre apparatus. In the hospital with which I am connected they have rigged up an apparatus for this purpose.

Dr. H. J. Maynard, of Cheyenne, Wyo., stated that in all fractures below the knee—even in compound fractures, unless there be much destruction or laceration of soft parts, plaster-of-Paris has been for years his strong hold. In Wyoming he has encountered a great many cases of fracture of the leg among cowboys from falling off horses, and these fractures were almost always below the knee. The first hint he got with regard to the use of the plaster stirrup in fractures was from Dr. Hodgen, of St. Louis, and he has since used it with excellent results in a great many cases.

Dr. Lemen said if there were any members present who were not familiar with the manner of making and applying the plaster stirrup, he would demonstrate how it was done. (This he did.) In the last twenty-five years he said he had treated over six hundred fractures with the plaster stirrup and invariably he has obtained good results in cases of fractures below the knee. There were three cardinal principles to be observed in regard to the treatment of all kinds of fractures: 1, the diagnosis—the surgeon should be sure that he has a fracture before he applies a dressing; 2, place the fragments in position; and 3, retain them there. If these three principles are observed the results would invariably be good.

The Academy then discussed the subject of

INJURIES OF THE TENDONS IN RAILWAY ACCIDENTS.

THE CHAIRMAN—Inasmuch as none of the essayists are present, we will proceed to a general discussion on this subject. Nothing troubles me more than injuries of the tendons. I want to hear what the members have to say. I expect to get some wheat and a lot of chaff as usual, but I will try and save the wheat.

DR. R. HARVEY REED—There is no question but what the subject of injuries of the tendons is one that is important to the railway surgeon. I do not think in any of the previous meetings of railway surgeons that I have attended in this country that this question has been discussed. Not a paper has been written on the subject, and yet at the same time the surgeon every now and then encounters a case of injury to the tendon that gives him more or less trouble. A traumatism to a tendon is bound under ordinary circumstances to give permanent injury, and where permanent injury occurs to a person riding on a railroad it usually means damage and loss of money to the company. We may have a tear of the tendon from its insertion; we may have a rupture in the body of the tendon itself. These are the two most frequent injuries I have met with or that are taught in our text-books,although there are other varieties, but in the treatment of injuries of tendons our text-books nearly all advise placing the arm or leg in a position in which the muscles can be relaxed, placing the tendon in the most relaxed position and keeping it there until the reparative process takes place. In my experience that is absolutely impractical, and I think if we rely on our success in treating cases in this way we will find ourselves defeated in our object. In the first place, you can not hold any tendon of any consequence in its place by a bandage. In the second place, if you bandage the tendon tight enough to come near holding it you cut off the circulation and if you do that you interfere with nature's process, and you can not have a normal reparative process. We recognize this as an important matter and one which we should seriously consider. When we have a simple tear of

a tendon we should make it a compound injury instead of a simple one. With the present advantages offered us by antiseptic and aseptic surgery, I think we are justifiable in making a simple injury of this kind a compound one. It is our duty to explain to the party injured the importance of doing so and the danger of permanent injury if it is not done. If we had a tear, a fracture, a solution of the continuity of the tendon in the middle part of it, we may have so much contraction as to be unable to bring the two ends of the tendon together. Then what are we to do? We are taught to build a bridge of catgut between the two points and we would expect a reparative process to go on the same as in bone or sponge grafting. We bring the two ends of the tendon together with catgut and therefore aid the reparative process and fill up the space with connective tissue. The difficulty with this method is to get your catgut sufficiently strong so that it will bear the tension brought on it by the muscle—*i.e.*, the biceps or the gastrocnemius, as the case may be. It is quite difficult to get enough catgut interlaced to hold the tendon solid without destroying so much tissue in the tendon as to impair or even prevent the reparative process and thereby induce sloughing of the ends of the tendon. If you get the catgut to remain in its place you are liable to have adhesions of the sheath of the tendon, and are liable to set up thecitis, and have these adhesions extending from the sheath of the tendon to the muscles, thus impairing the activity of the tendon which we desire to obtain if possible. I think the better plan is to lengthen the tendon by the ordinary methods, which you all understand, of cutting into the tendon above at this point (illustrating), and cut down near the end, turn the piece around and do the same way below, bring the two parts together, and it requires only a few short sutures to hold them in place; at the same time you lengthen the tendon. Instead of building in a bridge of catgut you simply lengthen the tendon with its own substance, and the reparative process goes on satisfactorily. On the other hand, if you have to suture the tendon in order to bring it together, I prefer silkworm gut to catgut or silk, as the silkworm gut is stronger and less liable to become septic, and when put in position it

remains unabsorbed for a long time. I have had very satisfactory results from its use. It seems to me with all of these different methods—any one of which you may adopt —it is highly important that you warn the patient against the possibilities of impairment of motion in cases of this kind. I recall a case I was called to treat a few months ago. In attempting to lift a barrel of salt, a railway employee tore the tendon of the long head of the biceps from its insertion. I made an incision in a line with the normal position of the tendon, beginning the incision just below the fibers of the deltoid and extending it downward some two inches. I found the muscle contracted, and the tendon coiled up with the belly of the muscle midway between the shoulder and the elbow. After fishing out the tendon I passed a strong double silkworm gut ligature through it, which I attached to a long needle. I carried this needle up the groove for the tendon under the deltoid and pectoralis major fibers to its normal point of insertion where I firmly anchored it subcutaneously. By this method I replaced the dislocated tendon besides anchoring it firmly at its normal point of attachment. By placing the arm in a Velpeau bandage the muscle was relaxed and the result was a speedy and very satisfactory recovery, with good use of the arm.

Dr. R. S. Harnden, of Waverly, N. Y.—I desire to express my pleasure at hearing the remarks of Dr. Reed in regard to this subject. It seems to me important, simply from the fact that it has received so little attention, also because of its importance with regard to the prospective feature of damages to railway companies. Some ten or twelve years since I undertook to suture tendons and, while I think at that time we were usually advised against suturing them, I undertook to go against that advice. I sutured the tendon in a case to relieve the patient from deformity and I had the usual result, I suppose—a thecitis which alarmed me—and I proceeded to take out my suture and made up my mind that I would never use one again. I thought I had acted unwisely in going against what I supposed was authority in the matter. This subject was held in abeyance by me until the advent of aseptic treatment. Since that time I have used sutures in tendons with invariably good results,

and I have become satisfied that the suturing of tendons is not only feasible, but proper, whether authority in the past has recommended it or not. The method of suturing tendons to overcome the natural shortening and contraction, as Dr. Sayre puts it, is something original. I would like to ask the Doctor if it is not a new method of suturing?

DR. REED—Yes, it is a comparatively new method.

DR. HARNDEN—It overcomes the natural method of shortening in a tendon. I would also emphasize the use of antiseptics and experimentation in this direction, because I think this subject may still become more important and useful to us.

DR. F. H. CALDWELL, of Sanford, Florida—I do not have a great deal of this work to do, but I have sutured some tendons, and have to report in a majority of cases that I have given relief to the unfortunate ones. By releasing the tendon from its surrounding adhesions I have been enabled to render the limb fairly useful, after making a resection and by suturing. I have never tried the plan mentioned by Dr. Reed of lengthening the tendon.

DR. F. H. PECK of Clinton, N. Y.—In incised wounds of tendons it is a very simple thing to put in a buried suture, making an end-to-end approximation of the tendon and getting a very nice result. In the class of injuries we are called upon to treat as railway surgeons, we are liable to get a contused wound of the tendon which will cause sloughing of the bruised parts and consequent shortening and contraction, and it seems to me it is important that when the tendon is likely to slough we should excise the bruised ends and then make our lengthening of the proximal and distal fragments of the tendon by the method that Dr. Reed has already mentioned.

DR. L. E. LEMEN, of Denver, Colo.—I have tried the plan that has been mentioned, but in the last six or eight months, in addition to suturing after rendering the wound as aseptic as possible and removing the bruised tissues, I have been in the habit of dusting the tendon, before I sew up my incision, with stearate of zinc, thereby preventing adhesion of the tendon to its sheath. You will be surprised how nicely it works. The stearate of zinc will remain for quite a while.

You apply it to the wound and then seal it over. It is simply to prevent mechanical adhesions of the tendon to the sheath.

Dr. Reed—Do you not have to make it aseptic in order to avoid sepsis?

Dr. Lemen—I render the wound antiseptic before I apply my suture and then wash it afterward. I do not use it as an antiseptic, but simply to prevent mechanical adhesions. It is one of the best powders for eczema or galling, or of any surface that is raw. I simply use my finger and rub it all around the sutured ends of the tendon until I varnish it over, so to speak, and sew the parts together. I have a great deal less trouble in having the tendon itself unite since practicing this plan.

Dr. Reed—I am not sufficiently familiar with the stearate of zinc to know whether it is antiseptic or not, or whether if we were to put in a wound, it will be the means of infecting the wound, or whether it would be necessary to submit it to any process by which it could be made aseptic. I heard a prominent surgeon advocate making antiseptics aseptic a few days since. Is this one of this kind?

Dr. Lemen—In cases in which I have used stearate of zinc, I will say that I have had union by first intention.

Dr. C. M. Daniels, of Buffalo—I think Dr. Reed and Dr. Lemon struck the keynote of this question when they referred to antiseptic treatment. Many years ago it was considered by leading surgeons almost criminal to perform subcutaneous tenotomy, but we have reached a point where we can incise tendons and suture them with a considerable degree of success.

Dr. Harnden—I would suggest one point in regard to the prognosis that seems to me important, as we are working for the interest of science and admittedly for the interest of the companies we represent. Inasmuch as there is a prospective feature of damages always in sight, I believe it is admitted that in a resulting contracture from injury to the tendons there is the feature of damages. Now in the light that has been given us by Dr. Reed's description of this operation, which seems to be very valuable, can we not render the prognosis of cases of thecitis, or the result of an injury to the tendons where contracture has taken place,

more favorable, thereby benefiting the company and science as well by this operation? I simply call attention to that point.

Dr. John E. Owens of Chicago—I feel somewhat handicapped in discussing this subject, as I did not hear the paper. I may say, however, that the prognosis after operations upon tendons is most favorable, not only when done at early, but at remote periods, and particularly is it the case if you can bring the two ends of the tendon together, after having prepared them for suturing. I think that this can be done by certain well-formulated operations for splitting and splicing one part with a piece taken from the other. It can be done by stitching the end of the divided tendon to the contiguous tendon, all of which you can do well, and I think it ought to go without saying that the prognosis after such procedures must be favorable.

Take, for instance, the case which I have in hand at the present time. It seems so simple that I feel like apologizing for mentioning it. The wound occurred across the dorsum of the hand of a patient during my absence, and when I returned to the city it was noted that the patient could not extend the middle finger. Two weeks afterward the ends of the tendons were readily united by making a longitudinal incision corresponding with the tendon, freshening the ends, bringing them together. The patient now has full control over the finger. If this case had been allowed to go on a considerable time without operation there certainly would have been added an element of cost which would have doubtless brought larger damages in case of a medico-legal contest. The time does not seem to cut a very important figure in the matter, because I have seen records of long periods after the accident where operations have been done for the purpose of uniting tendons to contiguous tendons for the purpose of restoring the loss of function. In the case referred to the question comes up when I ought to remove the splint. I am disposed to keep it there for six weeks, because on account of flexion I was afraid the new cicatrix might be gradually elongated and finally give way and the effect of the operation would be lost. I would say that rather long continuance of the splint seems to be essential.

Dr. Reed—Before the discussion is closed, there is one point that it might be well for us to remember, and that is when we make a tenotomy, we will say of the tendo-Achilles, for shortening of some kind as the result of some accident or disease, we all know that union takes place subsequently. That is a fact which we should consider before treating a tendon by suturing. We all know that where the tendo-Achilles is an inch too short, by making a tenotomy there is an inch of space to be filled up. We understand that space is not filled up with tendon but with connective tissue that is built up during the reparative process by the proliferation of connective tissue cells and which unites the two ends of the tendon by this band of connective tissue. We must take into consideration that where we have a fracture of the tendon, where it is possible to immobilize the part and where shortening is not too great, we can depend upon the reparative process in cases of this kind. Under these circumstances, I would not advise making a compound wound of one that is simple when it can be repaired by nature in this way. In my former remarks I was speaking of the class of injuries of the tendon which could not be repaired in this manner. I think it is the proper thing to splice the tendon by the well-known methods of recent date, whether by suturing or otherwise, as the case may be.

The Committee on Constitution and By-Laws being ready to report on that part relative to the duties of the Editor, such report was made, and on motion of Dr. C. B. Parker, Cleveland, Ohio, adopted.

On motion of Dr. R. Harvey Reed, Columbus, Ohio, the Constitution and By-Laws were then, as amended, adopted.

On motion of Dr. C. K. Cole, Helena, Mont., the Secretary was instructed to have the Constitution and By-Laws printed and a copy sent to each Fellow of the Academy, together with a slip authorizing the Secretary to sign the Constitution and By-Laws for them.

On motion of Dr. C. D. Evans, Columbus, Neb., the Committee on Publication was authorized to secure certificates of fellowship.

On motion of Dr. R. Harvey Reed, Dr. W. H. Elliott, Savannah, Ga., and Dr. L. E. Lemen, Denver, Colo., were ap-

pointed to conduct the newly elected President to the chair.

Dr. Cole, in accepting the Presidency of the Academy, spoke as follows: Mr. President and Fellows of the Academy: I feel that it would be inopportune for me to attempt to make any extended remarks at this time. Because first, we have no time to devote to that sort of thing, and also, because I am totally unprepared to say what would seem befitting upon this occasion. I can do no more than to make my profound acknowledgments for the distinguished honor which you have voluntarily conferred upon me, and to say to you that I am not unmindful of the gravity of the duties which I shall assume in becoming the President of this organization. I desire to say further, that I pledge you in the interest of railway surgery that I will give my very best efforts in behalf of the institution which we have organized upon this occasion. In saying this, I am not saying any more than any gentleman has already said to himself, and whatever I may do, as well as the other officers of the Academy, will necessarily be entirely unavailing unless they are seconded by your efforts. While I think we all appreciate the fact that we have taken an important step, and one fraught with grave responsibilities and important possible results, I question whether we ourselves, notwithstanding the consideration we have given this matter, fully appreciate the step we have taken and the importance of this structure which we are about to rear. If the American Academy of Railway Surgeons fulfills its mission, we will have been factors in making history in this country in connection with what is destined to be one of the most important branches of medicine—railway surgery.

Gentlemen, I trust you will excuse me and the embarrassment under which I labor. I feel keenly my inability to properly respond and give voice to the sentiments of my heart. I reiterate what I have previously said, that I will endeavor to the best of my ability to aid in advancing the objects and aims of this Academy and ask of you your indulgence and aid in furthering this plan. (Applause).

The following standing committees for the ensuing year were appointed by the President:

Committee of Arrangements: Chairman, Dr. A. D. Bevan, Chief Surgeon Iowa Central R'y, Chicago, Ill.; Dr. F. H. Caldwell, Chief Surgeon S. F. & W. R'y, Sanford, Fla.; Dr. J. H. Ford, Chief Surgeon, Big Four R'y, Wabash, Ind.

Committee on Transportation: Dr. W. J. Galbraith, Chief Surgeon, Union Pacific R'y, Omaha, Neb.; Dr. G. W. Hogeboom, Chief Surgeon, A. T. & S. F. R'y, Topeka, Kan; Dr. A. C. Scott, Chief Surgeon, G. C. & S. F. R'y, Temple, Tex.

After short addresses by the different officers elected, the Academy adjourned to meet in Chicago on Sept. 12, 13 and 14, 1895.

OFFICIAL ROLL OF FELLOWS

OF THE

AMERICAN ACADEMY OF RAILWAY SURGEONS.

Dr. David C. Ainey, Assistant Surgeon, D. L. & W. R'y., New Milford, Pa.

Dr. W. W. Appley, Surgeon, N. Y. L. E. & W. R'y., Cochecton, N. Y.

Dr. Wm. T. Bishop, Medical Examiner, Penna R'y., Harrisburg, Pa.

Dr. W. R. Blakeslee, Surgeon, N. Y. L. E. & W. R'y., Forest City, Pa.

Dr. D. C. Bryant, Oculist, U. P. R'y., Omaha, Neb.

Dr. W. L. Buechner, Surgeon, N. Y. L. E. & W. R'y., Youngstown, Ohio.

Dr. W. M. Bullard, Assistant Surgeon, Montana Central R'y., Helena, Montana.

Dr. A. D. Bevan, Chief Surgeon, Iowa Central R'y., Chicago, Ill.

Dr. J. F. Bancroft, Chief Surgeon, U. P. D. & G. R'y, Denver. Colo.

Dr. A. P. Brumbaugh, Surgeou, Penna. R'y, Huntingdon, Pa.

Dr. W. H. Buechner, Surgeon, Erie R'y, Cleveland, Ohio.

Dr. F. H. Caldwell, Chief Surgeon, S. F. & W. R'y., Sanford, Fla.

Dr. E. C. Carr, Surgeon, P. C. C. & St. L. R'y., Coshecton, Ohio.

Dr. M. Cavana, Surgeon, N. Y. P. & O. R'y., Oneida, N. Y.

Dr. Henry W. Coe, Surgeon, East Side R'y., Portland, Ore.

Dr. C. K. Cole, Chief Surgeon, Montana Central R'y., Helena, Montana.

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INDEX.

A

American Academy Railway Surgeons [illegible]
  constitution and by-laws [illegible]
  officers of [illegible]
  objects and aims of [illegible]
  reasons for organization of [illegible]
American Medical Association, Journal of. [illegible]
Amputation. [illegible]
Aneurysm, traumatic [illegible]
Approximately determining the amount of damage, etc. [illegible]
Arm, fracture of [illegible]
Attorney, the duty of [illegible]

B

Best method of approximately determining, etc.
  Discussion by John E. Owens [illegible]
    W. H. Myers. [illegible]
    E. Harvey Reed. [illegible]
    Arthur D. Bevan. [illegible]
    C. K. Cole [illegible]
    W. H. Elliott [illegible]
    F. H. Caldwell. [illegible]
    L. E. Lenox [illegible]
    R. S. Harnden [illegible]
Bevan, Arthur D., discussion of approximately determining, [illegible]
  traumatic aneurysm. [illegible]
Bryant, [illegible], treatment of burns of the conjunctiva [illegible]
Buechner, [illegible] H., discussion of traumatic aneurysm. [illegible]
Burns [illegible]

C

Caldwell, F. H., discussion of approximately determining damage, etc. [illegible]
  [illegible] of the tendons. [illegible]
Chaffee, [illegible], Should a railway surgeon procure a history, etc. [illegible]
Chapter first [illegible]
  second [illegible]
Claim agent, [illegible] duty of. [illegible]
Cole, C. K., accepting the presidency. [illegible]
  discussion of approximately determining damage, etc. [illegible]
  traumatic aneurysm. [illegible]
  [illegible] and aims of American Academy Railway Surgeons [illegible]
Committee of arrangements. [illegible]
  on transportation. [illegible]
Conjunctiva, treatment of burns. [illegible]
  discussion by F. H. Peck [illegible]
    R. S. Harnden. [illegible]
Constitution of diseases bearing upon traumatisms. [illegible]
Constitution and by-laws. [illegible]
  name [illegible]
  objects [illegible]
  membership [illegible]
  [illegible] [illegible]
  officers [illegible]

Constitution election 54
meeting 54
by-laws and rules of order 54
executive board 55
committee 55
scientific work 56
membership fee 56
dues 56
quorem 56
order of business 56
rules 57
amendments 57
Contused and lacerated wounds 74

D

Damage, best method of approximately determining, etc. 59
Daniels, C. M., horse hair in surgery 90
discussion, horse hair in surgery 93, 95
injuries of the tendons 128
Deception 68
Desired end of organization 27
Direct and indirect effects of such an organization 29
Dislocation 73

E

Ear, injuries to 76
Eczema, stearate of zinc in 128
Election of fellows 32
Elliott, W. H., discussion of approximately determining damage, etc. 87
objects and aims of American Academy Railway Surgeons . . 80
Entasis 75
Evans, C. D., discussion of traumatic aneurysm 43, 46
Eye, injuries to 76
Executive session 90
proceedings of 7

F

Femur, fracture of 70
simple fracture of 71
Fingers, fractures of 73
Forearm, fracture of 72
Friday, morning session 7
second session 32
third session 52

G

Galbraith, W. J., reasons for organization of American Academy Railway Surgeons 22

H

Harnden, R. S., best methods for approximately determining damage, ... 59
discussion of approximately determining damage, etc 90
horse hair in surgery 92
injuries of the tendons 126, 128
plaster-of-paris 121
railway spine 116
traumatic aneurysm 49
Hernia, rupture or, acute 76
History 9
Horse hair in surgery, use of 90
Discussion of by R. S. Harnden 92
J. F. Regar 93, 94
A. C. Scott 93, 94
C. M. Daniels 93, 95

I

Injuries, approximate amount 64
classification of 68
extent of permanent. 64
of the tendons in railway accidents 124
Discussion of by R. Harvey Reed. 124, 180
R. S. Harnden. 126, 128
F. H. Caldwell. 127
F. H. Peck 127
L. E. Demon. 127, 128
C. M. Daniels. 128
John E. Owens. 129
Injured person, the 98

J

Jay, Milton, discussion of railway spine 114, 116
plaster-of-paris and silicate of soda. 118
Journal of the American Medical Association. 57

K

Kelly, Webb J., discussion of plaster-of-paris 121
not a case of railway spine 109

L

Leg, compound fracture of 71
simple fracture of 71
Lemon, L. E., discussion of approximately determining damage, etc. 89
injuries of the tendons 127, 128
plaster-of-paris. 123
Livelihood, impairment of earning, etc 67

M

Maynard, J. H., discussion of plaster-of-paris 123
Motions. 130
Myers, W. H., discussion of approximately determining damage. . . 81

N

Next meeting, at Chicago 97
date of 97

O

Objects and aims of American Academy Railway Surgeons 19, 30
Officers, election of 95, 96
for the year. 3
Owens, John E., discussion of approximately determining damage . 76
injuries of the tendons 129
traumatic aneurysm. 44

P

Parker, C. B. discussion of plaster-of-paris 122
Peck, F. H., discussion of injuries of the tendons. 127
Permanent organization, a symposium on. 26
report of committee. 9
Plaster-of-paris and silicate of soda, comparative value 118
Discussion of by R. S. Harnden 121
Webb J. Kelly 121
C. B. Parker 122
J. H. Maynard 123
L. E. Lemen 123
Preface. 5
Proceedings of the executive session. 7
Prospective damage by impairment of earning a livelihood 67

R

Railway accidents, injuries to the tendons. 123
companies, list of and mileage 16
spine, not a case of. 109
Discussion of by Milton Jay. 114, 116
J. F. Regar 116
A. C. Scott. 117
Reed, R. Harvey, discussion of approximately determining damage. 82, 89
injuries of the tendons. 124
traumatic aneurysm 45, 51
a symposium, etc. 26
Regar, J, F., discussion of horse hair in surgery 93, 94
railway spine. 116
Report of the committee on permanent organization 9
Rhu, August, as secretary. 59
Roll of fellows 133

S

Saturday, fourth session. 59
fifth session. 90
Scalds. 76
Scott, A. C., discussion of horse hair in surgery. 93, 94
railway spine. 117
traumatic aneurysm. 47
Sergeant at arms. 95
Settlement, importance of early 68
Should a railway surgeon be required to procure a history, etc . . . 97
Sprains. 75
Stearate of zinc 127
Surgeon, the duty of. 100

T

Tendons, injuries of. 124
Time, its loss and actual value 64
Toes, fracture of 73
Traumatic aneurysm. 35
Discussion of by Howard J. Williams 43
C. D. Evans 43, 46
John E. Owens. 44
R. Harvey Reed. 45, 51
Arthur D. Bevan. 45
W. H. Buechner 46
A. C. Scott 47
R. S. Harnden 49
C. K. Cole 50
Traumatisms, approximate effects of. 66
constitutional diseases, etc 67

W

Williams, Howard J., discussion of traumatic aneurysm. 43
Worley, G. S., traumatic aneurysm 35
Wounds, contused and lacerated 74